

The American Journal of **DIGESTIVE DISEASES**

An Independent Publication

DEVOTED TO GASTRO-ENTEROLOGY AND NUTRITION

ORIGINAL CONTRIBUTIONS

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Number 2

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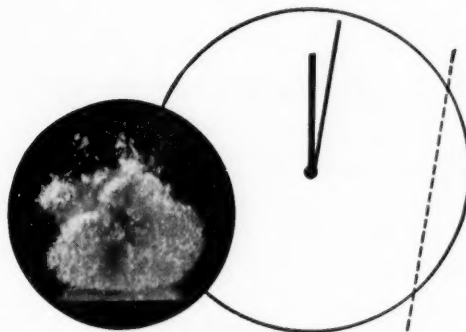
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THE TREATMENT OF ULCERATIVE COLITIS

M. B. LEVIN, M. D. AND B. A. GWYNN, B. S., Baltimore, Maryland.

THIS ARTICLE is limited to the discussion of the most important clinical factor that has been constantly predominant in all of our ulcerative colitis cases; and, the extremely important and helpful dietary treatment of the same.

We have found, universally, a greater than normal sensitiveness of the intestinal tract to carbon dioxide gas which, to ulcerative colitis patients, is a decided irritant, and recognition of this has formed the basis of our dietary regime. Naturally, any or all other proposed factors in these cases should be given their proper consideration and value, but our treatment, with the above in mind, has resulted more satisfactorily, when closely adhered to, than any others employed to date. Recently cortisone, A.C.T.H. and antibiotics have been of great aid. However, we must bear in mind that the use of such antibiotics in some patients tends to allow an increased growth of the fermentative higher yeasts and molds which, in turn, produce carbon dioxide gas from the lower carbohydrate foods and which would not do so under the normal bacterial flora now suppressed. Elimination of the sources of carbon dioxide gas being our immediate goal, we might, in such cases, have to limit the antibiotics to intermittent short periods rather than a long continuous stretch.

Without obstruction, as is easily appreciated, carbon dioxide gas in the intestinal tract is derived only from carbohydrates; i.e., sugars and starches in various forms. The amount and type of available carbon dioxide producing fermentative material of any meal in passage through the intestinal tract, usually governs the amount of irritation at the time.

The generally prevailing form of dietary treatment for such cases, is a bland diet, low in roughage but containing such excellent carbon dioxide producers as cereals, milk and milk products, vegetable juices, fruit juices, soft drinks and malted beverages, pureed fruits and vegetables. Clinically we find the lactic acid fermentation and carbon dioxide production of these foods far more irritating to the intestinal tract than roughage. For example, the sugar content of juices is readily available for fermentation and carbon dioxide formation, whereas in fresh fruits the pulp must be slowly digested before the sugar is released. We limit roughage, to some extent, only in the acute stage.

The dietary treatment thus resolves itself into keeping within the individual's tolerance for carbon dioxide producing foods and then gradually raising the tolerance, in due time, after healing the ulcerative lesions in the intestinal tract.

It might be well to point out here that fats, even when rancid, do not produce the irritative carbon dioxide gas and that, in general, proteins or nitrogenous elements of diet, of themselves, also do not produce carbon dioxide gas. Under ordinary conditions the nitrogenous or putrefactive gases are only about 5% to

10% of the entire intestinal gas content and not irritating.

Dietary treatment is as follows, keeping particularly, low carbon dioxide producers in the:

ACUTE STAGE

Foods allowed in unlimited quantities:

1. Clear soups or broths of meat origin containing the allowed meats, sea foods, fowl or eggs.
2. Whole or ground meats, with the exception of liver (omitted because of glycogen) and pork products. Lean ham or Canadian bacon is permitted occasionally, (canned or preserved meats provided preservatives are removed by parboiling).
3. Fish and other sea foods.
4. Poultry or other fowl with the exception of goose.
5. Eggs.
6. Butter.
7. Tea or coffee (no cream or sugar) but with synthetic sweeteners.
8. Gelatin artificially sweetened with saccharin or sucaryl and synthetically flavored.
9. Saccharin sweetened soft drinks.

NOTE (1)— $\frac{1}{2}$ to 1 slice of bread or its equivalent in hard rolls, soda crackers or saltines is permitted at each meal if tolerated and the amount gradually increased to within the patient's tolerance.

After the acute stage has passed the following foods are added to the diet, in the indicated order, within the patient's tolerance:

1. Cooked 5% vegetables.
2. Raw 5% vegetables.
3. Cooked 10% vegetables.
4. Raw 10% vegetables.
5. Fresh orange and grapefruit (not in the form of juice).
6. Other concentrated carbohydrates, such as large quantities of bread or its equivalent, plain cookies or cakes, small amounts of 20% or higher vegetables, noodles, macaroni or rice, etc., and other fruits to tolerance.
7. Milk and milk products (in addition to butter).

NOTE (2)—While some patients at first cannot tolerate a small piece of orange or $\frac{1}{2}$ slice of bread at any meal without gas irritation, and can consume a small turkey, etc. in 48 hours, their tolerance of the former often increases materially after several months of keeping within their particular carbon dioxide tolerance. Up to now, many patients have been asymptomatic for as long as 20 years.

SUMMARY

1. The intestinal tract in ulcerative colitis patients is more sensitive to carbon dioxide gas than that in normal individuals.

Submitted Aug. 22, 1952.

2. Carbon dioxide producing carbohydrate foods are markedly restricted in the acute stage.

3. Carbon dioxide producing foods are added to the diet in the order described, always within the tolerance of the patient, as clinical experience has dictated.

Case No. 1—J. A. W.—Age: 5 years, Male.

This patient first came under our supervision on 2/2/37 at 5 years of age in the Maryland General Hospital in consultation with Dr. R. P. Bay, for Chronic Ulcerative Colitis, Acute Scurvy and other general food deficiencies. Patient could not be weighed as he was too ill to be disturbed.

At 9 months of age he had eczema of the face and neck which lasted for months. At 2½ years had "intestinal gripe" characterized by watery, bloody stools; required several blood transfusions and was treated for ulcerative colitis from that time up to our being called into the case. He had Tonsillectomy at 3½ years of age but it had no effect on the condition. Temperature with this condition was up to 104° F. and at one of the hospitals, his condition previously was diagnosed as Typhoid Fever and was given transfusions. We could not confirm this diagnosis. Perirectal abscesses were drained surgically on 4 previous occasions but remained unhealed during his stay at the hospital. Emetine and other medication had given no relief. Patient had been on a starchy and other concentrated carbohydrate diet most of the time and solid foods as much as possible. Specific foods taken by mouth were recovered in the stool within 4 hours with almost no digestion of the same.

At the time he came under our supervision the temperature was 103° F. Acute scurvy involved his mouth, throat, most of the large joints and the tissues of the right leg, which were hanging away from the bone in a moth eaten appearance leaving a large opening between the Tendo-Achilles and Tibia. (This later became attached and filled in).

We immediately put the child under the dietary regime previously described and on antispasmodics (Tinct. Stramonium Qs) together with an acid digestive mixture containing equal parts of Dilute HCL, Peptenzyme Elixir and Pancreobilin Liquid to improve his digestion. He was also given a capsule containing 1/10 gr. codeine, 1/3 gr. phenacetin and 1½ gr. salol. At the start of treatment the patient could not be removed from the bedpan due to constant passage of bloody mucus, liquid stools, and the lifting off and on the bedpan was torture to his scorbutic hip joints. The patient began to show some improvement within 24 hours after starting our diet and medication; and, by 2/6/37, in spite of a temperature of 102° F. with Rhino-pharyngitis, had only one bowel movement during the night and normal sleep. From then on there was progressive improvement of the scurvy. The acid digestive mixture was adjusted to maintain digestion of meats at the 70% level, and gradually reduced and finally discontinued on 3/20/37. ("Gastric Digestion," A Simple Visual Test and In Vitro Studies, by M. B. Levin, M.D. and S. Raffel, Sc.D., Baltimore, Maryland—published in *Annals of Internal Medicine*, Vol. 8, No. 7, January 1935).

On 2/23/37 Cod liver oil was added and on 3/5/37 typhoid agglutination and typhoid stool culture were reported negative. At this time the weight was 39 lbs. Within four weeks from the start of treatment, the patient left the hospital, tolerating some of the green vegetables in addition to his animal proteins with 1 or 2 normally formed bowel movements daily. However, it is noteworthy to mention here that despite his tolerance for some of the green vegetables and his ability to consume a 12 lb. turkey within 48 hours, he could not tolerate 1 teaspoonful of orange juice without causing a diarrheal flare-up.

3/27/37, after an acute blockage of the perirectal abscess, a flare up of acute scurvy occurred, affecting the right knee joint, the periosteum at the peri-arthritis region of right knee and ankle. This abscess was the source of pus and occasional RBC until 5/6/37, when the perirectal abscess was opened and drained and a stricture just above the recto-sigmoid junction was dilated, under anesthesia. At this time the rectum was seen to be entirely normal in appearance, no evidence of polyps or polypoid material or ulceration anywhere in the visible portion of the bowel. The temperature

returned to normal the day following and the scurvy rapidly improved.

On 5/20/37 for the first time the patient had a normal bowel movement following his operation, and no pus or blood was found in the stool. The diet was gradually increased within the patient's tolerance, but when he went beyond this, the colitis temporarily flared up until he readjusted the diet to within his tolerance. Under upper respiratory tract colds there was a flare up for a time of the scurvy. Drainage from the affected tissues occurred. During this period, examination of the nose showed an old deviated nasal septal condition, the result of a previous fracture, which seemed to be responsible for his repeated nasal colds. This together with the scurvy, affected the mouth, palate, etc., and in turn enlarged the cervical lymph glands. The scorbutic leg gradually healed up, during the following year. On 3/22/40 his weight was 55 lbs. and the legs showed no shortening although the right showed noticeably scarred areas. The nasal condition remained the same. Development and growth of all parts of the body occurred normally during the years following, except for slightly lessened circumference of right leg. On 5/18/45, after taking a great deal of orange juice during the preceding months, the patient had almost weekly attacks of left kidney colic with hematuria, and X-ray confirmation. 12/2/50 patient's height was 66½" and weight 130 lbs. He still had slight hematuria but no real kidney colic attacks which previously were relieved by antispasmodics. There was no ulcerative colitis, no scurvy and proctoscopic examination at this time revealed normal rectal mucosa.

6/30/52 the same condition as above prevailed. Unless he exceeds his tolerance for carbohydrate foods has no colitis. Kidney stone and nasal condition not attended to as yet.

CASE NO. 2—Mrs. V. T.—Age: 24. F.

The Sinai Hospital recorded:

1st admission—6/6/44 to 6/24/44

Condition, which began three weeks prior to admission with blood-streaked stools and diarrhea and which showed colitis of descending colon by Barium Enema and a small ulcer of the colon on proctoscopic examination, was unimproved on discharge, after being given symptomatic and supportive therapy. Physical and other examinations except for those showing ulcerative colitis, were essentially normal.

2nd admission—10/28/48 to 11/17/48

On the second admission she complained of bleeding from rectum for three weeks prior to this and recurrence of ulcerative colitis symptoms 4 months prior to present bleeding. The positive physical findings were: stool covered with mucus and blood, Hb. 11.7 gms. per 100 cc., blood chemistry within normal limits. Hemorrhoidectomy was performed for which the post-operative course was uneventful, and the patient was supposedly discharged in good condition.

Following this the patient's colitis condition became progressively worse, with patient fearing to leave the house due to uncertainty of sphincter control. In December 1948 the local proctologist referred her to a Philadelphia proctologist for treatment, without resultant improvement. From January to February 1949 patient was under suspicion of food allergy. Attempts were made by the allergist to control the situation by strict diet. Under cottage cheese and milk diet the ulcerative colitis condition became extremely severe. Then a strict diet of lamb chops and rice, sweet potato and carrots, tea or grapefruit improved the condition a little. Another gastro-enterologist treated patient for ulcerative colitis from May 1949 to June 1949. Was given "rich foods and much sugar as gaining weight was a necessity." Her condition became progressively worse.

On June 7, 1949 Mrs. T. came under our control for treatment of ulcerative colitis, migraine and allergic rhinitis. Under the diet indicated in the preceding description of the "Treatment of Ulcerative Colitis," and aided by antibiotics previously prescribed by others ineffectively, there was progressive improvement. On June 13, 1949 she substituted a half soda cracker or wheat bread toasted, for the equivalent quantity of rice which had been eaten up to that time and which the patient feared to discontinue. Bowel movements at this time were 3 daily and formed. On June 17, 1949, patient had 4 bowel movements, but formed, under the change of regime. On July 14, 1949, the one half soda cracker at

meal times was gradually increased to 2 whole crackers, then a small piece of bread increased to a whole slice, and patient noticed that with 2/3 slice of bread no migraine occurred but it did occur with a whole slice. Formed stools continued until the quantity of 5% vegetables consumed was beyond patient's tolerance, upon which slightly softer bulky stools occurred. With the gradual adjustment of the diet to within the patient's tolerance, there was progressive improvement except when patient was indiscreet in her total carbohydrate intake which produced gas and irritation. On 8/2/49 stool for the first time was negative to blood, both visible and occult. From then on to 9/5/52 patient had no evidence of ulcerative colitis unless her dietary indiscretion precipitated either this or migraine attacks. Proctoscopic examination at this time revealed normal bowel.

CASE NO. 3—Mr. G. B.—Age: 29. M.

Lutheran Hospital summary of report follows:

Admission 8/6/48 to 9/3/48

DIAGNOSIS: Ulcerative Colitis.

Patient complained of rectal bleeding with 4 or 5 stools daily for two months preceding admission; and loss of weight. Was given Sulfa drugs, blood transfusions and discharged with the remark that "patient will probably have recurrence unless his psychiatric aspect has adequate attention."

Sinai Hospital summary of report follows:

Admission 1/18/49 to 2/9/49

DIAGNOSIS: Chronic Ulcerative Colitis.

Examination showed active bleeding in the stool, Barium Enema revealed spasticity in descending colon, rectosigmoidoscopy showed mild inflammation and pus in rectum and lower sigmoid. Patient was treated with Sulfasuxidine, Traserline, Vitamin therapy, Amigen 10% in glucose daily. Condition on discharge much improved.

Following discharge from the Sinai Hospital patient "lived the life of a semi-invalid with 6 or 7 bloody, liquid bowel movements daily with uncertain sphincter control." During this time was on colitis diet, sulfa pills and vitamins up to December 1950.

Patient came under our control in December 1950 for actively bleeding ulcerative colitis, having been on the usual starchy bland diets. We immediately discontinued all previous medication and diet and started him on the dietary regime previously outlined. There was relatively rapid improvement, the patient adding small quantities of bread, vegetables and other foods within his tolerance. Stools gradually decreased in number and became more formed. Visible and occult bleeding gradually decreased until on 2/27/51 there was complete absence of occult and visible blood. The condition remained normal unless he was indiscreet and went beyond his tolerance of the various carbohydrate foods. This resulted in exacerbations of the colitis and on occasions precipitated occult, and less frequently, microscopic bleeding. As a matter of fact his bowels became somewhat constipated on occasions. After one interval of about 8 months during which the patient had no colitis symptoms and thought himself cured, he overindulged in the new crop of fruit and as a result his colitis flared up for a short time. Proctoscopic examination on 10/9/52 revealed a normal mucosa. Unless the patient exceeds his tolerance his intestinal condition remains normal.

CASE NO. 4—Mrs. B. S.—Age: 27. F.

The Johns Hopkins Hospital recorded:

1st admission—7/10/50 to 8/18/50

The patient complained of a four year history of recurrent episodes of diarrhea and bloody stools. Physical examination

at the time was not remarkable except for a temperature of 99.8. Significant laboratory studies revealed a hematocrit of 39, a sedimentation rate elevated to 26 corrected, gross and microscopic blood in stool and a leukocytosis, of 16,000 with a normal differential. Blood chemistry was within normal limits. A Barium Enema revealed shortening of the lumen with narrowing and obliteration of the haustral markings on the left side, the colon appearing to be rigid and two oblique films showed evidence of superficial ulceration of the descending colon. On a regimen including bedrest and colitis diet with supplementary vitamins and liver injections and subsequently Chloromycetin and Sulfa drug, there was no improvement. Accordingly, she was given total intravenous alimentation for a 16 day period and was discharged, considered to have had an excellent result, having at that time only one to three stools per day, moderately well formed. She was to continue on a colitis diet with vitamin and liver supplements as in the Hospital.

2nd admission—11/2/50 to 12/29/50

Was because of exacerbation of ulcerative colitis during the preceding 4 or 5 weeks. Barium Enema revealed marked ulcerative colitis as previously. After lack of improvement for one week was given ACTH, 3.1 gram, over a month, which decreased stools from 8 to 2 per day. Rectosigmoidoscopy showed a decrease in edema and pus, and the subsequent Barium Enema showed "remarkable regressive changes." Discharged without medication.

3rd admission—1/7/51 to 2/7/51

From a few days after last discharge patient noticed gradual return of ulcerative colitis with 8 or 9 bowel movements daily. Anal fissure caused much rectal pain. Temperature up to 102° F. Rectosigmoidoscopy and Barium Enema showed the changes of extensive long standing ulcerative colitis. Intravenous and oral alimentation and medication were ineffective. 3.3 gms. cortisone over a 19 day period improved condition, resulting in marked facial edema. Rectosigmoidoscopy preceding discharge showed objective improvement over the findings on admission. At the time of discharge patient received 50 mgm. cortisone by hypo q.d.

4th admission—8/21/51 to 8/30/51

To attempt gradual reduction or stopping of Cortisone therapy. Active colitis continued with 3 liquid stools and bleeding while on ¼ cc. Cortisone by hypo. After one week Sulfasuxidine 1.5 gm. 4 times daily by mouth and 6 gm. in 60 cc. of warm water per rectum at bedtime was administered, and one bowel movement occurred daily at time of discharge.

Patient was on Sulfasuxidine until February 1952 with a gradual reduction from 12 to 4½ gm. per day. On 4½ gm. a day began to have 8 to 10 fluid bloody movements daily. In March 1952 was again given Cortisone, 300 mgm. daily without noticeable improvement in the ulcerative colitis. At the time patient came under our control she had from 8 to 10 movements per day.

Patient came under our control on June 3, 1952 with the diagnosis of Chronic ulcerative colitis (actively bleeding), allergic rhinitis and urticaria, migraine. We discontinued Cortisone and Sulfa medication and put patient on the dietary regime for ulcerative colitis as previously described. 4 gms. of Chloromycetin were administered during the first 4 days. Patient showed progressive improvement and stool on 6/13/52 showed no bleeding. Absence of blood continued to 10/8/52, at which time proctoscopic examination revealed normal mucosa, the Barium Enema showing the "healed stage of ulcerative colitis and no specializations."

PROBLEMS IN DIAGNOSIS AND COMPLICATIONS OF AMEBIC INFECTION OF THE LIVER

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AMEBIC HEPATITIS and amebic abscess are relatively uncommon in the United States. De-Bakey and Ochsner (1) reported that during the 20 year period from 1928 to 1947 inclusive, 263 patients with amebic hepatitis and hepatic abscess were admitted to the Charity Hospital and Touro Infirmary in New Orleans. Spellberg and Zivin (2) reported in 12,000 consecutive admissions to Veterans Administration Hospital, Hines, Illinois, from January to August 1946, 7 had amebic hepatitis and 8 had amebic abscess of the liver. In 17,344 patients admitted to our hospital from October 4, 1946 to October 4, 1951, there were 5 cases with amebic infection of the liver. These cases, mainly, offered considerable difficulty in establishing a diagnosis. Prior to admission, only 1 out of 5 patients was suspected of having amebic infection. An interval up to approximately 7 years occurred from the initial infection to the time hepatic disease was recognized (Table 1). Early diagnosis of amebic hepatitis and hepatic abscess offers a challenge in view of good results obtained with medical treatment prior to the development of serious complications. Accordingly 5 cases are presented, illustrating the difficulties and problems in diagnosis and the complications which occurred.

Case I. A. P., a white male, age 24, was admitted to the hospital on August 13, 1948, because of right costovertebral pain, right upper quadrant pain, low-grade fever, fatigue and weight loss of about 20 pounds in a period of seven months. He had experienced similar symptoms in August 1945 while stationed in the southern part of the United States, but in addition at that time he had diarrhea. He was considered to be a psychoneurotic. In 1943 he was treated for kidney stones without surgical intervention.

Physical examination on admission revealed an acutely ill, cachectic white male in moderate distress. Temperature 101.6°

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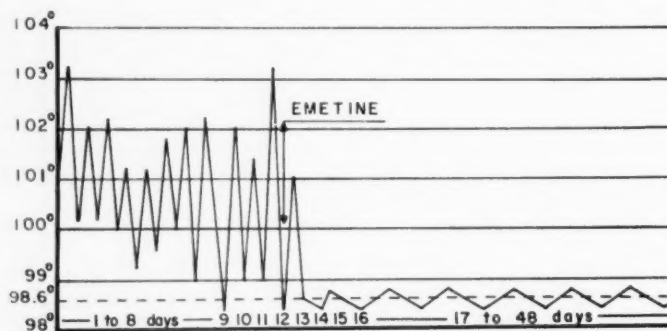
F., pulse 100 per minute. There were signs suggestive of some consolidation in the base of the right lung posteriorly, marked tenderness over the right costovertebral angle and the right flank. Liver, kidney and spleen were not palpable. He was considered to have 1) empyema, 2) pyelitis, or 3) renal calculi.

Initial blood count revealed 3.4 millions RBC, 10.5 grams hemoglobin, 20,500 WBC with 73% neutrophils, 20% lymphocytes, 5% eosinophils, and 2% monocytes. Cephalin-cholesterol flocculation test was 2 plus, thymol turbidity test was negative, BSP test was normal. Ten stool examinations were negative for *E. histolytica*. Chest x-ray showed slight rounding with slight elevation of the right diaphragm. Gastrointestinal series, gallbladder series and intravenous pyelographic studies were normal.

A few days following admission, he was referred for G. U. consultation to rule out renal calculi or a right perinephritic abscess. Perirenal aspiration yielded negative results. Subsequently because of increase in the size of the liver, increase in tenderness on percussion over the liver and restriction of motion of the right diaphragm on fluoroscopic examination, he was started on emetine hydrochloride as a therapeutic test. Within 24 hours his fever disappeared (Fig. 1), pain became less severe, and at the end of therapy 10 days later he gained 14 pounds in weight. He was then given a course of viofilm daily for 14 days.

COMMENTS

This patient was considered to have psychoneurosis while in service. There was some question whether he was a malingerer. His symptomatology during service was essentially similar to those on this hospital admission except for diarrhea. In view of the past history of kidney stones, the mind of the examiner was focused on the G. U. tract. He did not give a recent history of diarrhea. Not until the development of liver tenderness with impaired motion of the right diaphragm was amebic hepatitis seriously considered. Response to therapy seemed to substantiate the diagnosis of amebic hepatitis. Although repeated stool examinations were negative for *E. histolytica*, complement fixation test was strongly positive for amebiasis. However, the result of the latter test was not available prior to the onset of emetine therapy.



GRAPH 1—Showing temperature of case I, (A.P.).
Amebic Hepatitis and response to Emetine.

TABLE I

SHOWING TIME INTERVAL FROM ONSET OF AMEBIASIS TO DATE HEPATIC AMEBIASIS OR HEPATIC ABSCESS OF LIVER WAS RECOGNIZED

Patient	Probable Onset of Amebiasis	Date Recognition of Amebic Hepatic Infection (Yrs.)	Time Interval
Case 1 A. P.	July 1945	August 17, 1948	3.0
Case 2 R. M.	June 1945	April 20, 1949	3.8
Case 3 E. L. S.	May 1944	March 3, 1951	6.9
Case 4 S. D.	March 1949	August 31, 1949	0.5
Case 5 H. D.	October 1945	October 24, 1949	4.0

Case II. R. M., a white male, age 32, was admitted to the hospital on April 13, 1949, with a 7 months history of weight loss of 34 lbs., pain under the right ribs, chills, fever and weakness. The pain was aggravated by coughing, which produced a white, foamy phlegm, but no hemoptysis. Past history showed that he had pneumonia in the Spring of 1948 and in October 1948, which was treated with penicillin, and following the latter illness he began to go downhill, with much coughing, loss of weight, extreme weakness, easy fatigability and continuous headaches. He served 12 months in the Pacific Theater of Operations and while in the Philippines he had dysentery but did not know the results of the stool examinations. He stated approximately 85% of the troops had this condition.

On admission he appeared chronically ill, pale, and had a temperature of 100° F., and pulse of 4 per minute. There was extreme tenderness over the entire right abdomen and in the right costovertebral angle with 3 plus spasticity of the right upper abdomen. The liver, kidneys and spleen were not palpable. There was questionable elevation of the right diaphragm on chest x-ray but it was interpreted as negative chest. His admission blood count showed 3.44 million erythrocytes, 10.5 grams hemoglobin, 9,500 WBC, with normal differential count. The following day his WBC increased to 12,800. The liver function tests including thymol turbidity, cephalin-cholesterol flocculation, serum bilirubin, total protein and A-G ratio were entirely normal. Proctoscopic examination was negative.

He was strongly suspected of having a perinephritic abscess. Flat plate of the abdomen revealed depression of the right kidney and obliteration of the right psoas muscle shadow. Pyelographic studies showed medial rotation of the right kidney with distortion of the calices. Perirenal aspiration was negative. He showed no clinical improvement with procaine penicillin 300,000 units t.i.d. He continued to run a low-grade fever, the liver edge became palpable on the 5th hospital day, and there was tenderness to percussion over the liver. On the 8th hospital day, a follow-up chest x-ray revealed definite elevation of the right diaphragm and fluoroscopic examination performed in conjunction with an upper G. I. series revealed restriction in motion of the right diaphragm. At this time, his WBC had risen from 12,800 to 18,000, with essentially the same differential count. Emetine therapy was instituted. Within 48 hours his fever disappeared and he showed remarkable improvement clinically. He was also given a course of diodoquin. During his convalescence he had a return of symptoms, which promptly subsided with emetine therapy. After emetine therapy had been instituted, two blood samples sent to the Army Medical Center, Washington, D. C., showed a 3 plus complement fixation test for amebiasis. Chest x-rays and right pyelogram repeated during

convalescence were normal. E. histolytica were not recovered from his stools during the entire period of hospitalization.

COMMENTS

This patient had diarrhea while in the Philippines in 1945, where amebiasis was endemic. His interim history revealed a pneumonia in the Spring of 1948 with uneventful recovery and progression of symptoms following pneumonia in October 1948. Six weeks prior to hospitalization and following x-ray studies, he was told his kidney had "fallen down." He was sent to this hospital with the diagnosis of ptosis of the right kidney. Impressions following admission here were: 1) amebiasis, 2) pulmonary tuberculosis, 3) perinephritic abscess, or 4) chronic brucellosis.

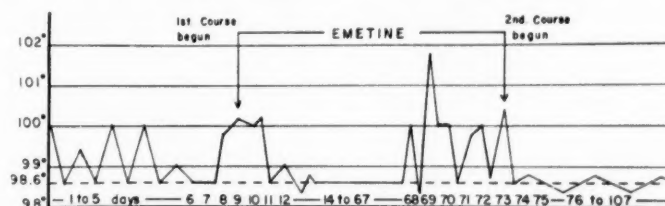
Because of right flank pain he was referred to the G. U. Service. Studies revealed abnormalities of the right kidney. Perirenal aspiration was negative. Although there was evidence pointing to right kidney disease, such as a perinephritic abscess, with evidence of increasing tenderness in the right upper quadrant, increase in liver enlargement, and restriction in motion of the right diaphragm, he was given emetine as a therapeutic test with prompt subsidence of his symptoms. A 3 plus complement fixation reaction for amebiasis was received from the Army Medical Center on blood submitted on two occasions. Chest x-ray during convalescence taken 4 weeks after admission revealed no elevation of the right diaphragm. Initial cholecystographic studies failed to visualize the gallbladder, whereas it was visualized during convalescence. Repeat pyelographic studies during convalescence were normal. He had a recurrence of symptoms starting on his 68th hospital day, which promptly responded to a second course of emetine (graph 2).

TABLE II

COMPLEMENT-FIXATION TESTS IN AMEBIC HEPATITIS AND AMEBIC HEPATIC ABSCESS

Case	Patient	Date	Results
1	A. P.	August 22, 1949	4 plus
2	R. M.	May 17, 1949	3 plus
		May 23, 1949	3 plus
3	E. L. S.	January 31, 1951	1 plus
		April 4, 1951	2 plus
4	S. D.	September 21, 1949	3 plus
5	H. D.	June 10, 1949	3 plus
		June 27, 1949	2 plus

Case III. E. L. S., white male, age 24, was admitted to the hospital on January 11, 1951, because of fever, chills, backaches and night sweats of nine days duration. The chill occurred every day between 11:00 a.m. and 1:00 p.m. Back pain was mild in intensity, rather diffuse, and at the level of the lower ribs. Three days prior to admission, a chest x-ray and blood count taken by his private physician were reported



GRAPH 2—Temperature of case 2, (R.M.), showing response to first and second course of Emetine.

as normal. A smear of his blood was negative for malarial parasites. However, he was placed on atabrine because of previous attacks of malaria, as daily chills with fever was very suggestive of a recurrence. When first questioned, and during the early part of hospitalization, he denied any history of severe diarrhea or bloody stools. He gave a history of malaria while stationed in Leyte, Philippine Islands, despite prophylactic atabrine. He was thought to have malaria, apparently not proven, in January 1946, and again in 1948, which was resistant to quinine and for which he was given atabrine for a prolonged period.

On admission, the patient was poorly nourished and appeared chronically ill. Weight 139 lbs., usual weight 155 lbs. Temperature 102° F., pulse rate 100 per minute. Blood pressure 95 systolic and 70 diastolic. A small, firm, solitary lymph node was present in the left posterior cervical triangle. There was slight pharyngeal lymphoid hyperplasia. The skin showed brownish pigmentation without definite evidence of atabrine tinge. He had taken atabrine during the previous nine days. Abdominal examination was completely negative.

Blood count on admission showed 3.95 million RBC, 12.5 grams hemoglobin, 15,000 WBC with 78% neutrophils, 20% lymphocytes, 2% eosinophils. Sedimentation rate 33 mm. per hour. Urine showed 10-20 WBC per HPF. Blood smears were negative for malarial parasites. Initial chest x-ray and upper G. I. series were normal.

On admission, he was considered to have (1) malaria, (2) infectious mononucleosis, (3) pyelitis, (4) periarteritis nodosa. Laboratory studies included examinations and cultures of urine, stools and bone marrow, blood cultures, various agglutination tests, liver function studies, all of which were negative. Blood was drawn for various complement fixation tests, including amebiasis and histoplasmosis. Heterophilic antibody test was positive in 1:64. Histological examination of a gastrocnemius muscle biopsy was normal. Urine culture was positive for hemolytic staphylococci. X-rays of the chest (Fig. 1a), long bones, skull, and small bowel were negative for any evidence of carcinoma or Hodgkin's Disease.

The organisms recovered from the urine were sensitive to sulphamerazine but the patient's fever did not subside with administration of this drug. Chloroquin was given for three

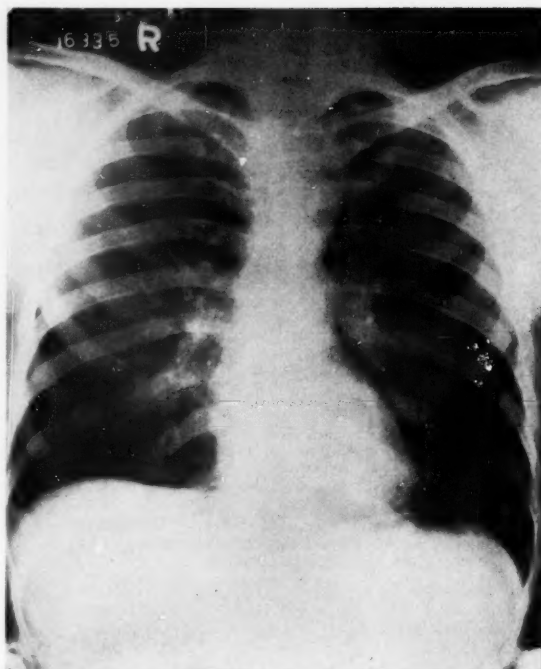


Fig. 1-b: Chest x-ray of Case 3 (E. L. S.) on the 48th hospital day showing blunting of the right diaphragm with a slight pleural effusion.

days to rule out malaria without significant clinical response. He was then given various antibiotics empirically because of his spiking temperature up to 104° F., for which no cause

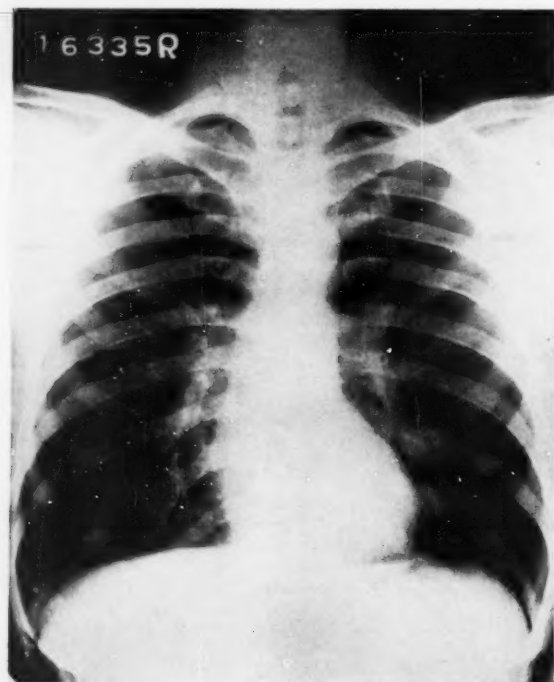


Fig. 1-a: Chest x-ray of Case 3 (E. L. S.) on the 1st hospital day was within normal limits.

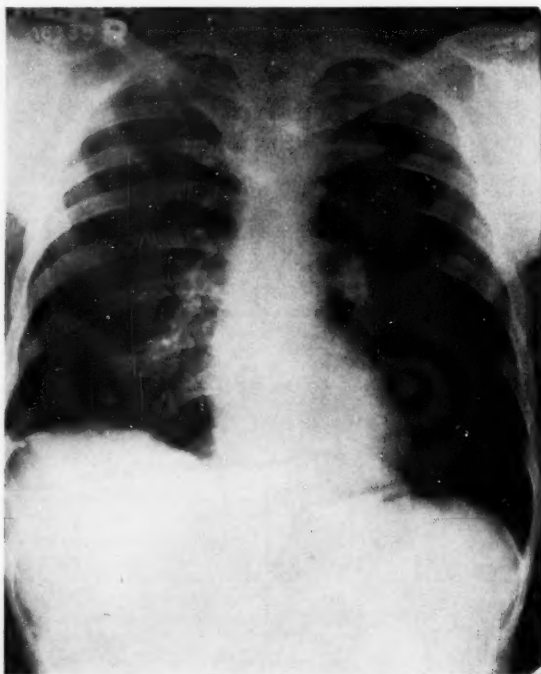


Fig. 1-c: Chest x-ray of Case 3 (E. L. S.) on 60th hospital day showing elevation of right diaphragm.

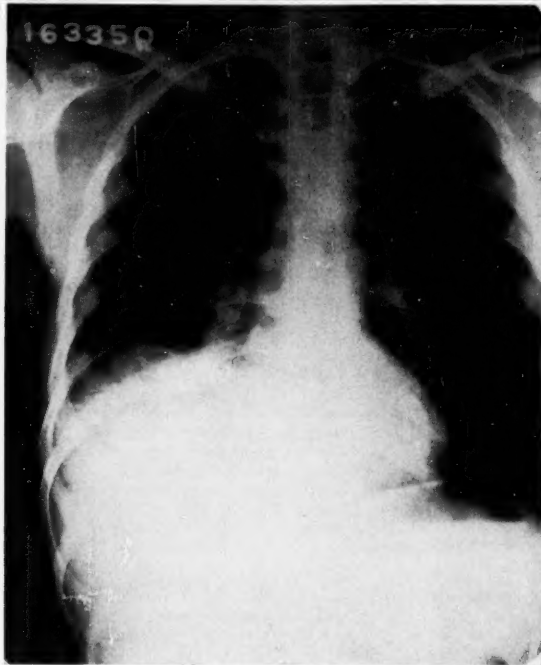


Fig. 1-d: Chest x-ray of Case 3 (E. L. S.) on 63rd hospital day showing involvement of the base of the right lung within 24 hours after rupture of hepatic abscess and after 3 days of emetine therapy.

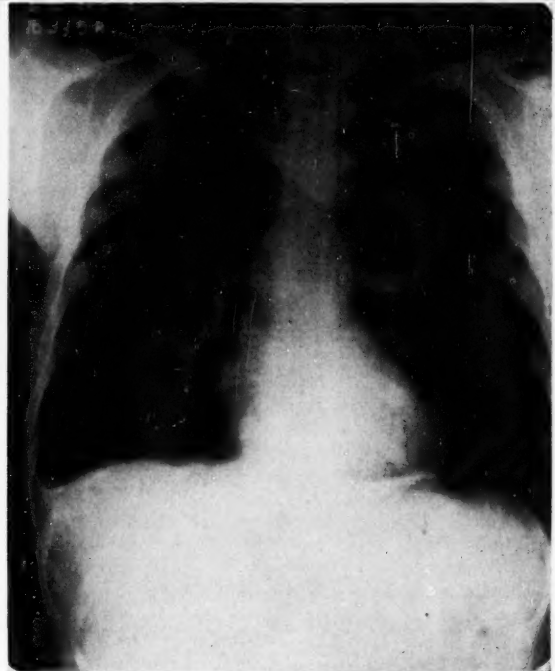


Fig. 1-e: Chest x-ray of Case 3 (E. L. S.) during convalescence showing obliteration of the right costophrenic sinus with complete clearing of pulmonary involvement.

was found. The antibiotics were given alone or in various combinations, causing a temporary slight lowering of his fever.

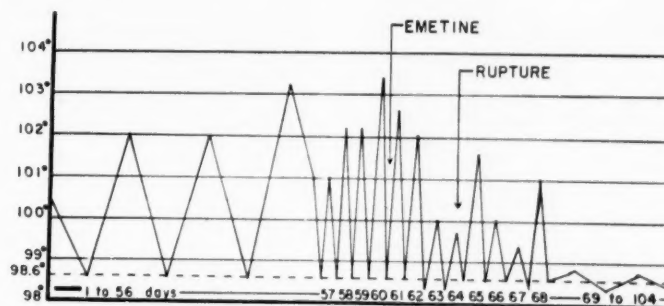
At the end of the sixth week of hospitalization he developed intermittent pain in the right shoulder and several days later complained of pain in the right posterior lower chest with accentuation on changing position. At this time, the liver edge was palpated 4 cms. below the right costal margin. There was slight tenderness to percussion over the liver. A third chest x-ray (Fig. 1b) revealed for the first time, blunting of the right diaphragm with a slight pleural effusion. Fluoroscopy revealed normal movements of both diaphragms with some blunting of the right costophrenic angle.

Emetine was given as a therapeutic test without any dramatic response. His white count had increased to 18,500. Repeated stool examinations were negative for *E. histolytica*. Three days after emetine was instituted, right pulmonary involvement was seen on the fourth chest x-ray (Fig. 1d). On the following day, the patient coughed up large amounts of material from his lungs which resembled "tomato juice" and almost caused him to suffocate. Examination of this ma-

terial revealed no *E. histolytica*. It was felt that the patient had a hepatic abscess which had ruptured into his right lung. In addition to emetine, he was given penicillin and aureomycin to prevent secondary infection. On the tenth day of emetine administration, his fever subsided (graph 3), and he was placed on a ten day course of carbarsone. His subsequent course was uneventful, with remission of fever, gain in weight and strength. Serial chest x-rays showed complete clearing of the right lung (Fig. 1e) and fluoroscopic examination showed adequate excursions of the right diaphragm. Electrocardiograms were normal. Complement fixation test for amebiasis was reported as 1 plus and 2 plus on blood withdrawn on the 20th and 83rd hospital days respectively.

COMMENTS

This patient supposedly had malaria in 1944 despite prophylactic atabrine, and attacks in 1946 and 1947 which were treated with quinine and atabrine. While in the Service, he was not considered to have



GRAPH 3—Case 3, (E.L.S.) showing temperature response prior to and after rupture of abscess into lung.

amebiasis. He had seen considerable service in the Pacific and while in Leyte he had diarrhea. Prior to admission here, he was thought to have malaria by his physician, for which he was given atabrine without symptomatic improvement. There were various impressions following admission.

He was a problem in diagnosis. Early, during hospitalization, our attention was focused on the genitourinary tract because of dysuria, suprapubic pain, and a positive urine culture for hemolytic *Staphylococci*. Various antibiotics were given without any change in his clinical course. The right diaphragm was not elevated on chest x-ray taken after admission, and motion was not restricted on fluoroscopic examination. Percussion tenderness over the liver, as well as enlargement, were absent.

Not until the 48th hospital day did the liver become palpable, and a third chest x-ray taken several days later revealed elevation of the right diaphragm with some obliteration of the right costophrenic sinus. The leukocyte count had risen to 18,500, with 80% neutrophils, and 18% lymphocytes. Because of findings pointing to liver involvement, he was given emetine as a therapeutic test. On the 4th day of emetine therapy a rupture of the liver abscess occurred.

Case IV. S. D., a white male, age 57, was admitted to the hospital on July 22, 1949 complaining of an illness of 5 months duration manifested by an initial diarrhea, marked weakness, fatigability, 40 pound weight loss, and cramping abdominal distress. In February 1949, he toured the southern states, following which he developed severe diarrhea consisting of 8 to 10 watery bowel movements daily, cramping ab-

dominal distress, some nausea without vomiting, all of which lasted 4 to 5 days. Following the initial severe diarrhea, 3 to 4 liquid stools in 24 hours occurred intermittently. Since onset of his illness he had lost 40 lbs. in weight, developed considerable weakness and fatigability, some chilly sensations without definite fever. For 2 weeks prior to admission, there had been considerable swelling of his ankles with some dyspnea. There was no history of previous cardiac or renal disease.

Physical examination revealed a white male who was pale, underweight, and chronically ill. Weight 135 pounds. Temperature 99.2° F., pulse 96 per minute, BP 88/60. Voluntary muscular rigidity was present over the right abdomen. The liver edge was not definitely palpable, but there was percussion dullness over the right upper quadrant extending down to a level 4 fingerbreadths below the right costal margin. Liver surface was smooth. Kidneys and spleen were not palpable. Four plus ankle edema was present.

The hemogram on admission showed 3.52 millions RBC, 8.5 grams hemoglobin, 9,100 WBC with 84% neutrophils, 11% lymphocytes, 3% eosinophils, and 2% monocytes. Sedimentation rate was 27 mm. per hour. Stools were repeatedly negative for occult blood and parasites. Gastric analysis following histamine revealed low values for free hydrochloric acid. Chest x-ray revealed slight elevation of the right diaphragm with some fibrosis in the base of the right upper lobe. Numerous examinations of the sputum failed to reveal acid fast bacilli on smear or culture.

The patient had been referred to the hospital as having carcinoma of the bowel, parasitic bowel infection, or cholecystitis. Our initial impression was carcinoma of the bowel or hepatoma. First G. I. series revealed a questionable small ulcer crater on the lesser curvature of the stomach and a second after 2 weeks of ulcer management was negative except for a "J"-shaped outline of the stomach which appeared to be compressed to the left by an extrinsic mass (Fig. 2). Liver function studies performed because of hepatomegalia were normal except for a 3 plus cephalin-cholesterol flocculation test, alkaline phosphatase elevated to 18.7 mg.%, 15% retention of bromsulphophthalein at the end of 45 minutes, total protein of 6.5 grams % with albumin 3.2 grams % and globulin 3.3 grams %. Electrocardiogram showed an incomplete right bundle branch block.

His temperature continued elevated to about 100° F. daily. WBC had risen to 12,700. Serial chest x-rays were unchanged, but fluoroscopic examination revealed restriction in motion of the right diaphragm. Although his ankle edema subsided, because of the patient's downhill course and workup suggesting a hepatoma or some form of abdominal malignancy, an exploratory laparotomy was performed on the 40th hospital day. The liver was found to be greatly enlarged, swollen, and fluctuant in several areas. The latter areas yielded thick pink purulent material on aspiration, and from one area 1500 cc. of pus was obtained and the abscess cavity was packed with loose gauze. He was treated with emetine, penicillin, and later with carbarsone and diodoquin. Subsequent hospital course was uneventful with restoration of patient's hemogram and abnormal liver function tests to normal. Two blood samples which were sent to the Army Medical Center, Washington, D. C., following surgical intervention were reported doubtful and 1 plus complement fixation tests for amebiasis. The diagnosis of amebic abscess was not seriously considered prior to surgical intervention.

COMMENTS

This patient apparently contracted his amebic infection in a southern state. He did not seek treatment until 2 weeks prior to admission and was referred here by his private physician as a possible carcinoma of the bowel, cholecystitis or possible parasitic bowel infection. The initial impression here was possible carcinoma of the bowel, but barium enema x-rays were normal. On routine chest x-ray an elevation of the right diaphragm and some fibrosis in the right lung field were seen. Initial fluoroscopy showed good excursion of the diaphragms. A questionable ulcer crater

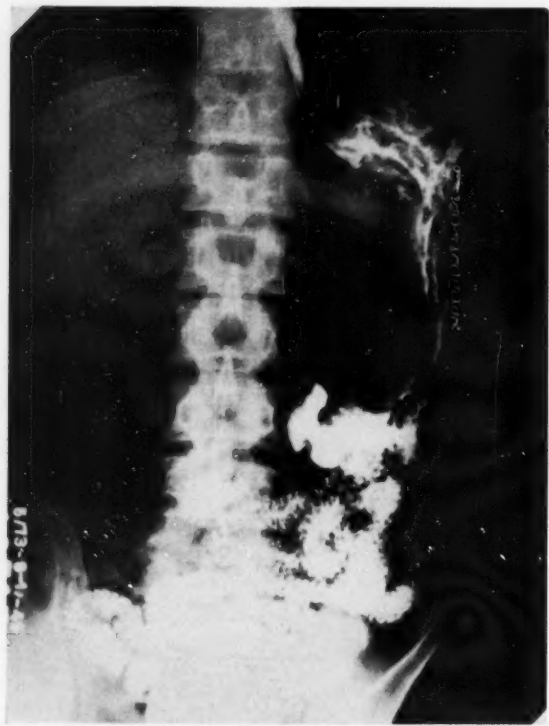


Fig. 2: Gastrointestinal x-ray of Case 4 (S. D.) showing "J" shaped outline of stomach apparently compressed to the left by an extrinsic mass.

on the lesser curvature of the stomach was seen on the first G. I. series. A second G. I. series suggested the possible presence of carcinoma of the stomach or an external abdominal mass compressing the stomach to the left. On the 21st hospital day, x-ray revealed no further increase in elevation of the right diaphragm but fluoroscopic examination revealed restriction in motion of the right diaphragm.

Because the patient was going downhill and because of the possibility of hepatoma compressing on the stomach or of gastric carcinoma, an exploratory laparotomy was performed. The liver was seen to be greatly enlarged with several fluctuant areas. 1500 cc. of pus were aspirated from the abscess in the right lobe of the liver. Open drainage was instituted. Emetine, diodoquin, carbarsone, and penicillin were administered and the course was uneventful.

Case V. H. D., a white male, age 37, was admitted to the hospital on May 26, 1949, with a three week history of pain in the lower right chest and right abdomen. The pain was dull aching in type and not aggravated by breathing. Two days after the onset of pain he had chilly sensations, nausea and vomiting, generalized body aches, a low-grade fever, occipital and retro-orbital headaches, and excessive perspiration. He had a slightly productive cough and also progressive weakness. His past history revealed three similar episodes, one in 1945 while on Luzon, Philippine Islands, and again after discharge from service in September and November 1946, each lasting 9-12 days. The patient had served 19 months overseas during which time he was on Luzon, Borneo, and New Guinea.

Physical examination on admission revealed an acutely ill white male who perspired freely and seemed to have considerable pain over the right lower thorax. His skin appeared

slightly icteric. Temperature 101.2° F., pulse 100 per minute, BP 130/80. There was flatness to percussion over the right anterior chest below the fourth rib and posteriorly below the sixth rib. There was considerable tenderness and increased resistance to palpation over the right quadrant of the abdomen and right costovertebral angle. The spleen was questionably palpated.

His admission hemogram showed 3.74 millions RBC, 11.5 grams hemoglobin, 14,000 WBC with 81 neutrophils and 19% lymphocytes. Total proteins 8.0 grams per cent, albumin 3.5 grams per cent, globulin 4.5 grams per cent; cephalin-cholesterol flocculation test was negative, and thymol turbidity was normal. Initial chest x-ray revealed an elevated right diaphragm with a fluid level below suggestive of sub-phrenic abscess (Fig. 3). Two blood samples sent to the Army Medical Center, Washington, D. C., were later reported as showing a 3-plus and a 2-plus positive complement-fixation tests for amebiasis.

He was considered to have amebic abscess. He was started on emetine hydrochloride grain one daily and also penicillin immediately after admission. On the sixth hospital day, following a paroxysm of coughing, he expectorated bloody material. Serial chest x-rays on the ninth hospital day showed pulmonary involvement with probable fluid in the pleural space (Fig. 3a). His temperature ranged up to 100° F daily and the leucocyte count ranged between 12,000 and 14,600. The right pleural space was aspirated on two occasions and a slight amount of sero-sanguinous fluid was obtained. In a relatively short time pulmonary involvement became very extensive and his general condition deteriorated. Medical management was continued and his pulmonary lesion decreased in extent. The patient improved clinically, became afebrile; the pulmonary lesion decreased in extent and an abscess with a fluid level below the right diaphragm was no longer visible on serial x-rays.

Although the clinical course was very satisfactory his pulmonary lesion failed to resolve completely and remained stationary. It was felt best to remove the involved area surgically. This was performed on the 151st hospital day and consisted of a right lobectomy. On exploration a 4 cm. right

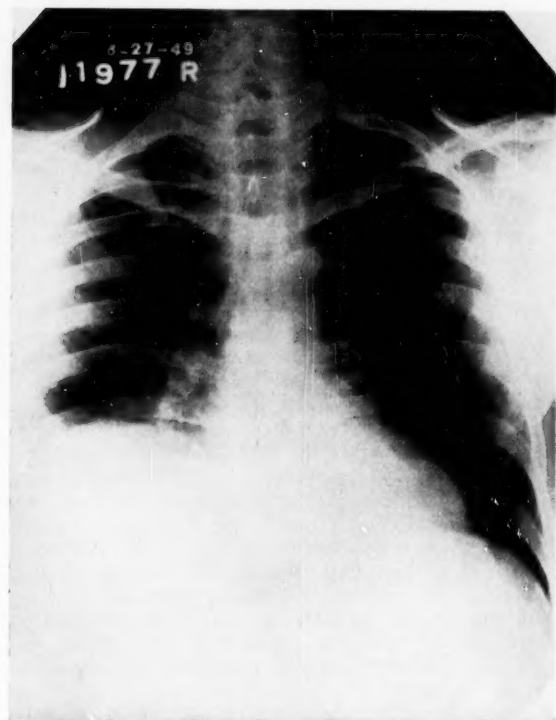


Fig. 3: Chest x-ray of Case 5 (H. D.) showing elevation of right diaphragm. Fluid level below diaphragm is poorly reproduced in photograph.

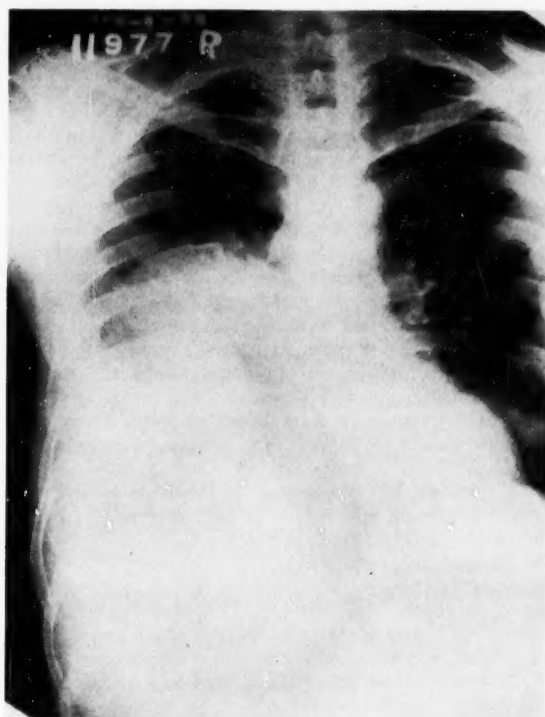


Fig. 3-a: Chest x-ray of same patient (H. D.) on the 9th hospital day showing right pulmonary involvement.

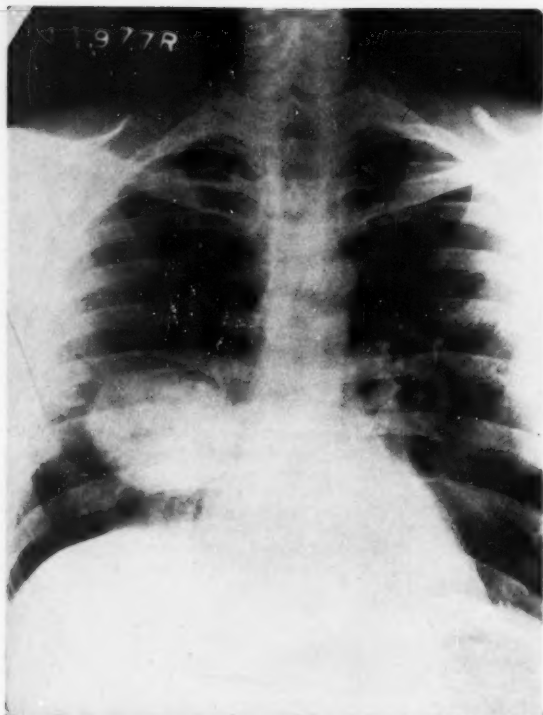


Fig. 3-b: Chest x-ray of same patient (H. D.) on 49th hospital day showing residual pulmonary involvement.

subphrenic abscess was found from which yellow, creamy, cheesy material was removed. Treatment by means of blood transfusions, anti-amebicides, penicillin, and chloromycetin was continued. His course following surgery was uneventful.

COMMENTS

This patient had untreated amebiasis in Luzon in 1945 and presumably again because of similar symptoms in September and November 1946. Between November 1946 and three weeks prior to admission he was symptom free. He was sent to this hospital with the diagnosis of amebiasis or hepatitis. Initial chest x-ray revealed an elevated right diaphragm with fluid level below the diaphragm suggestive of subphrenic abscess. His clinical response to emetine and other amebicides initially was not satisfactory, but it was felt best with close surgical supervision to continue medical management plus aspirations. On the sixth hospital day he coughed up bloody sputum. Two thoracenteses on the 13th and 20th hospital days revealed sero-sanguineous fluid. Serial chest x-rays showed rapid increase in involvement of the lung parenchyma in addition to an effusion. Gradual improvement occurred with emetine, penicillin, and diodoquin. Finally, the patient became afebrile and the pulmonary lesion remained stationary. Because of failure of the lung lesion to resolve completely, a thoracotomy was performed on the 151st hospital day. A right lower lobectomy was performed and a solitary subphrenic abscess of the dome of the liver was incised and drained. Convalescence was uneventful.

Following spontaneous drainage through his broncho-tracheal tree, and with emetine and antibiotics,

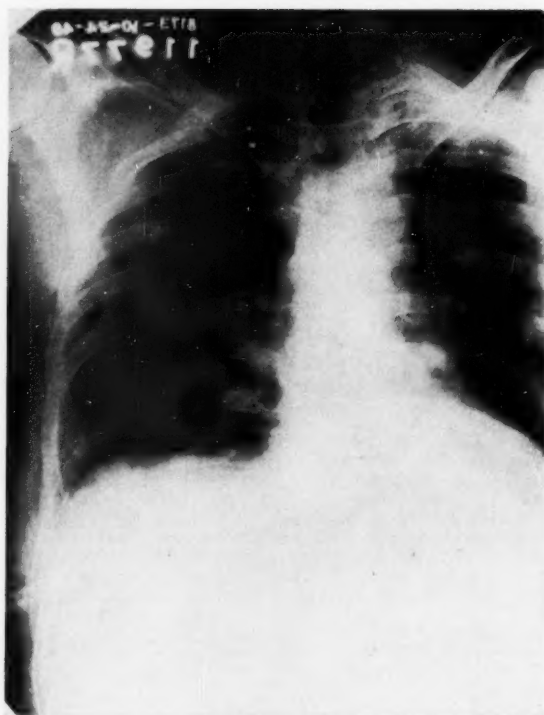


Fig. 3-c: Chest x-ray of same patient (H. D.) on 151st hospital day following right lobectomy and drainage of small subphrenic abscess.

his symptoms improved with progressive clearing of the pulmonary involvement.

DISCUSSION

Five patients with amebic infection of the liver are reviewed. Two patients had amebic hepatitis and three amebic hepatic abscess. Three patients contracted their infection outside the United States during World War II. Approximately three to seven years elapsed before hepatic involvement was discovered in four of the five patients (Table I). In only one patient was a diagnosis of amebiasis made prior to admission. One patient gave a history of recent diarrhea. *E. histolytica* was not recovered from any patients although numerous stool examinations were made. Kidney aspiration was performed on two patients suspected of having a perinephritic abscess, one of whom, Case 2 (R. M.), showed displacement of the right kidney with distortion of the calices on pyelographic study. Pyelographic distortion produced by an hepatic abscess has been reported (3). Case 4 (S. D.), had an exploratory laparotomy with a pre-operative diagnosis of abdominal carcinoma or hepatoma. Case 5 (H. D.), required a lobectomy for residual pulmonary involvement long after rupture of an abscess into his right lung. Shaw has emphasized the importance of more definitive surgical therapy including lobectomy and segmental resection in certain forms of pulmonary complications of amebic hepatic abscess (4).

Treatment with emetine hydrochloride yielded spectacular results in those patients without a serious complication. It is felt that emetine hydrochloride

should be given as a therapeutic test for amebic infection to patients who, recently, or in past years, have had diarrhea, especially in areas where amebiasis is endemic, and who complain of right abdominal and/or right lower chest pain, have fever, hepatomegaly, leucocytosis, with or without alterations of the right diaphragm. The therapeutic test with emetine has been advocated (2, 5). No significant reactions or electrocardiographic alterations occurred with emetine, one grain daily for ten days, injected subcutaneously.

Diarrhea need not be present (1, 2, 5, 6). A history of diarrhea in previous years may not be elicited from the patient despite repeated questioning by the physician, Case 3 (E. L. S.). Liver function tests were not helpful in establishing diagnosis. Complement-fixation tests for amebiasis are advocated early during hospitalization. In our cases (Table II), because of the necessary lapse of time between sending blood samples to the Army Medical Center, Washington, D. C., and receiving reports of the complement-fixation tests, it was not of practical importance as an aid in instituting emetine therapy. It helped substantiate the diagnosis although the therapeutic response to emetine was conclusive in uncomplicated cases. Bergen (7) has stressed that the complement-fixation test for amebiasis as performed by the National Institute of Health, the Army Medical Center and the Communicable Disease Center, Washington, D. C., is a useful adjunct in the

diagnosis of extra-colonic lesions. The importance of repeated x-rays and fluoroscopic examinations cannot be overemphasized as no alterations of the right diaphragm may be present initially. Should an inadequate therapeutic response to treatment with emetine hydrochloride occur, and an abscess cannot be discovered with aspiration, surgical intervention is almost mandatory in order to prevent rupture. Administration of antibiotics diminishes the incidence of secondary infection, a serious complication prior to the antibiotic era.

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THE HYDROPHILIC AND ACID BINDING PROPERTIES OF ALGINATES

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SODIUM ALGINATE has been used for many years as a thickening and stabilizing agent in food products. It is used very widely in ice cream to prevent growth of ice crystals during storage (1). The National Formulary IX contains a monograph on sodium alginate (2).

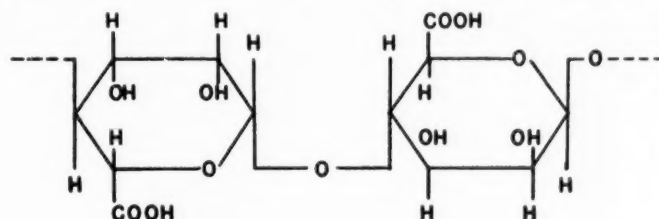
As far as we are aware a description of the hydrophilic and acid-binding properties of alginates has not appeared in the literature. Sodium alginate is mentioned in Gray and Tainter's article "Colloid laxatives available for clinical use" (3). These authors state: "It is a good thickening agent for cosmetics and foodstuffs and will doubtless soon find its way into medicinal products."

This paper describes results of experiments conducted to compare the water absorbing and acid-com-

bining properties of alginates with those of other hydrophilic colloids commonly used as bulk laxatives.

All of the bulk laxatives in use today are derived from living plants, and can be grouped into the following categories: (a) substances derived from plant seeds and employed generally in this form such as Psyllium Seed. (b) Substances obtained from natural gum exudations, such as Gum Karaya. (c) Colloids obtained from seaweeds including Agar, Irish Moss and the Alginates and (d) the modified cellulose products, methylcellulose and carboxymethylcellulose.

Each of these substances is a complex association of carbohydrates and their reaction or oxidation products. Their chemistry is extremely complex and in some cases little is known of their actual chemical structure. The substances have in common however, the property of dispersing and swelling in water to form highly viscous mixtures which are colloidal in nature.



ALGINIC ACID

Figure 1.

These solutions exhibit gel structures at extremely low concentrations and over a wide range of concentrations. The water-retaining ability of these materials and the emollient character of their solutions are ideal for bulk laxative purposes. In general, they resist destruction in the gastro-intestinal tract.

The hydrophilic colloids obtained from seaweeds are derived from two groups; Algin, or sodium alginate, obtained primarily from the brown algae *Macrocystis* and *Laminaria*; and Irish Moss and Agar from the red algae *Chondrus* and *Gelidium*, respectively. Alginic acid is a polymeric anhydro- β -D-mannuronic acid having the chemical structure shown in Figure 1. The mucilaginous substances obtained from Irish Moss and Agar are calcium salts of sulfuric esters of a linear polygalactose.

Hydrophilic properties. An attempt was made to compare the "bulking" or water-retaining property of a number of proprietary bulking laxative preparations with that of the alginates. After examining a number of compositions made by dispersing these materials in water in various proportions it did not appear feasible to use their bulking capacity as a valid means for evaluating the water retaining ability. This is primarily because of the different behavior exhibited by the various materials when dispersed in water. The seaweed colloids and the modified cellulose products produce a viscous continuous type of mucilage in contrast to the discontinuous gel formed by the plant seeds and gum exudation products.

It was found however that the method of Blythe, *et al.* (4), which measures the water-retaining capacity against a standard osmotic pull is more suitable for the evaluation of the relative water-retaining capacity

of bulk laxatives. The rate and extent of water diffusion through a semipermeable membrane separating the colloidal mixture and a highly hypertonic solution is plotted in Figure 2. Sodium alginate was found to possess greater water-holding capacity than any of the other materials tested. Carboxymethylcellulose and methylcellulose, although not as effective as sodium alginate, possessed considerably greater water holding action than products derived from psyllium and gum karaya.

The experimental procedure devised by Blythe is however subject to the following inherent limitation. Diffusion of liquid through the membrane into the hypertonic solution is measured by the volume of hypertonic solution discharged through the overflow tube. Because of the somewhat viscous nature of the hypertonic polyethyleneglycol solution, attainment of equilibrium between it and the diffused liquid is slow, with the result that the liquid lost through the overflow tube is essentially undiluted while that retained in contact with the cellophane membrane is extensively diluted. This loss in concentration gradient impedes the diffusion process, the magnitude of this dilution effect becoming most pronounced for those substances exhibiting the least water-retaining capacity.

To investigate in another manner the water retaining properties of hydrophilic colloids, a method that simulates more closely the conditions prevailing in the digestive tract was evolved. The material under investigation was dissolved or dispersed in 100 ml. of artificial intestinal juice and enclosed in a cellophane bag. This bag was immersed in 900 ml. of isotonic sodium chloride solution and the complete unit warmed to 37°C. After 24, 48 and 72 hours at this temperature

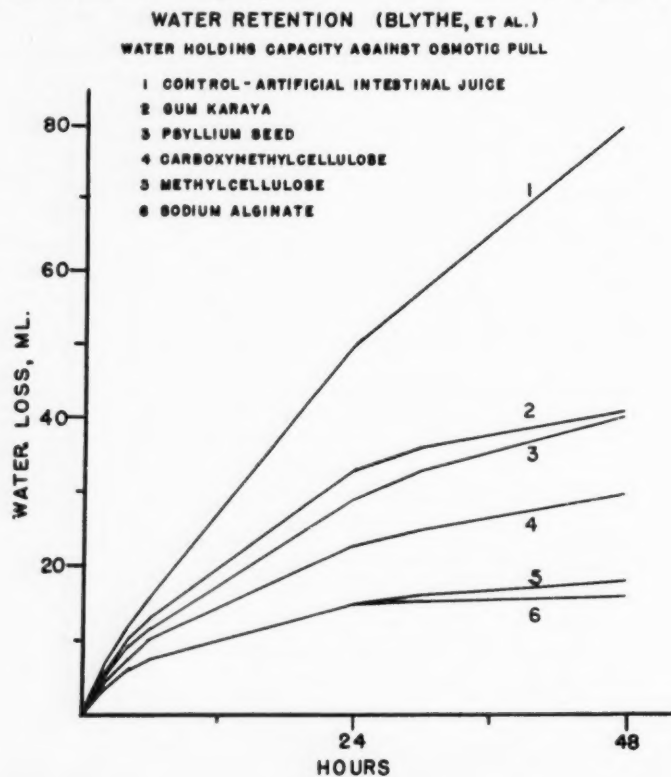
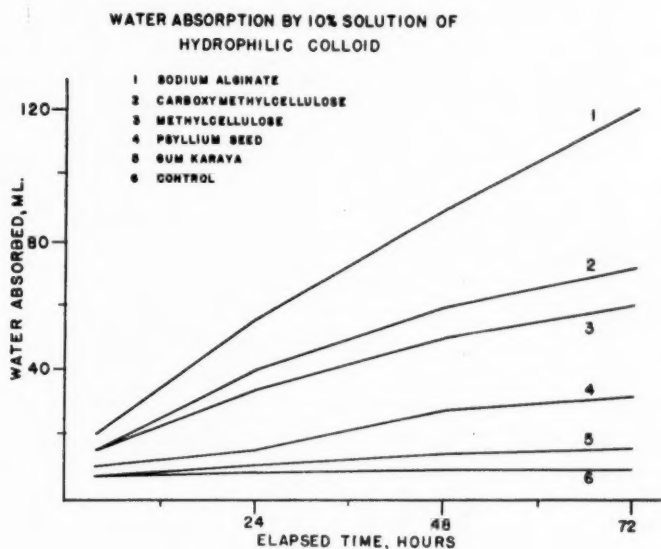


Figure 2.



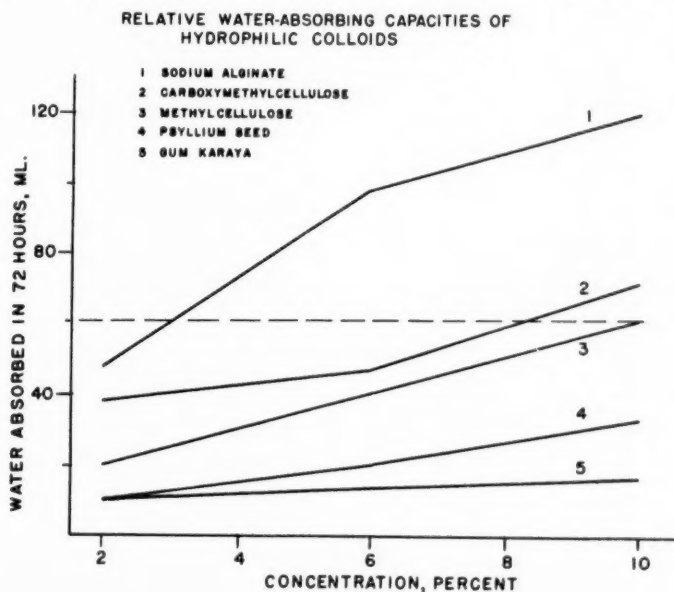
the volume of liquid absorbed by the various colloidal materials was measured. The results of this experiment are plotted in Figure 3, which shows the rate of water uptake by a 10% solution or dispersion of the hydrophilic colloid in water. Sodium alginate is markedly superior to other bulking substances in its water absorbing potency. The products derived from psyllium seed and karaya are again poorest in this respect while methylcellulose and carboxymethylcellulose occupy an intermediate position.

The volume of water taken up after 72 hours by various concentrations of the bulk laxatives was also measured. With all products investigated the water-retaining ability increased with concentration. Sodium alginate appeared to be superior in water-absorbing activity at all concentrations measured. These results are illustrated in Figure 4. By drawing a horizontal

line parallel with the base line concentrations of hydrophilic colloids having equivalent water absorbing capacities can be estimated. For instance, using the base line shown in Figure 4, a 3 per cent solution of sodium alginate has a water absorbing capacity equivalent to an 8 per cent solution of carboxymethylcellulose and to a 10 per cent solution of methylcellulose. Psyllium seed and karaya, even when present in concentrations greater than 10 per cent, are inferior to 2 per cent solutions of sodium alginate and the cellulose products.

Acid-binding properties. Certain hydrophilic colloids such as carboxymethylcellulose are known to possess valuable acid binding properties. It was therefore of interest to investigate the acid combining properties of sodium alginate, calcium alginate and alginic acid.

When evaluated according to the procedure adopted



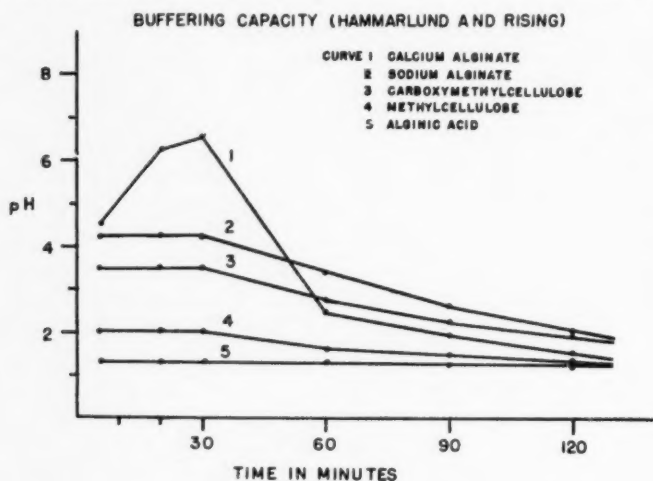


Figure 5.

by the USP for measuring the acid consuming capacity of antacid materials the hydrophilic colloids were found to have low acid neutralizing values. The volumes of tenth-normal acid consumed per gram of material were as follows: Calcium alginate, 41 ml.; sodium alginate, 37 ml.; carboxymethylcellulose, 26 ml. and methylcellulose 3 ml. For comparison, dried aluminum hydroxide gel, USP, consumes not less than 250 ml. of tenth-normal acid per gram.

To obtain a more accurate picture of the antacid characteristics of the hydrophilic colloids, the Hammarlund and Rising (5) technique was employed. This method, which was designed to compare acid-buffering capacities of antacids under conditions more closely simulating actual stomach conditions, consists of the measurement of the pH obtained on addition of repeated increments of tenth-normal hydrochloric acid to the antacid at regular intervals. Except for sodium alginate, which clumped badly on contact with acid, and required preliminary dispersion in water, the procedure as described by Hammarlund and Rising was followed. The results of these determinations are plotted in Figure 5, which shows the change in pH as a function of time, additions of 25 ml. portions of acid having been made to 2.5 g. of the antacid substances at thirty minute intervals. Calcium alginate effected a transient elevation of pH to 6.5 which dropped rapidly to the pH 2-3 range. Except for this temporary approach to neutrality exhibited by this substance, the calcium and sodium salts of alginic acid and sodium carboxymethylcellulose all raised the pH of tenth normal hydrochloric acid to 1.5-3.0, a range considered suitable for the treatment of hyperacidity. Methylcellulose and alginic acid possessed no appreciable acid-binding properties.

DISCUSSION

Desirable properties for an acceptable bulk laxative are high swelling power, lack of toxicity and ready availability. Sodium alginate meets these requirements adequately. It possesses greater swelling power and water retaining capacity than other bulk laxatives and thus should produce better results with a small dose. Sodium alginate also appears non-toxic in chronic toxicity experiments in animals and has not caused peculiar pigmentation of kidneys as observed with

psyllium seed. Intestinal lesions observed after administration of karaya gum have not been observed with sodium alginate. Since sodium alginate does not swell in acid environment, it would not be expected to give the feeling of fullness often experienced after ingestion of methylcellulose. Clinical trials carried out by Dr. Glass and Dr. Mulinos and others indicate that sodium alginate is more effective than other bulk laxatives; it is also acceptable to the patients and rarely causes unpleasant side effects.

Ludwig, *et al.* (6) recently described the cation exchange properties of alginic acid. It has been found in these laboratories and by others (7) that orally ingested alginic acid combines in the body with sodium ions, the sodium alginate thus formed being excreted in the feces.

SUMMARY

1. Sodium alginate possesses considerable water absorbing and water retaining properties. It is in this respect superior to the natural gums, methylcellulose and carboxymethylcellulose.
2. Sodium alginate and calcium alginate also possess acid binding properties of a similar order as carboxymethylcellulose.
3. The marked hydrophilic and water retaining properties of sodium alginate in neutral or mildly alkaline environment and the absence of swelling in strongly acid environment suggests that this material would be of value as a bulk laxative.

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IDIOPATHIC SEGMENTAL INFARCTION OF THE GREATER OMENTUM

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IDIOPATHIC SEGMENTAL infarction of the greater omentum is the term recently introduced into the literature to describe a localized area of hemorrhagic infarction of the free edge of the greater omentum; the area of infarction is usually in the right half and most dependent portion of the greater omentum and occurs in the absence of other known disease—either intraperitoneal, systemic, or traumatic.

Bockus reviewed the literature in 1944 and noted only 10 cases which unqualifiedly fell into the above classification. Since that time additional reports from widely scattered areas indicate that the condition is probably more common than published articles would indicate. While the disease is infrequent in occurrence, its importance lies in the fact that clinically it presents as an acute abdominal emergency; usually resembling acute appendicitis and occasionally a perforated viscus.

When exploration of the acute abdomen fails to demonstrate the expected pathology, the omentum should be examined for this lesion. The usual operative findings are: an edematous properitoneal space, a variable quantity of blood or sero-sanguineous fluid in the peritoneal cavity, and a dark red indurated, sharply demarcated mass at the free edge of the greater omentum. The mass may be adherent to the abdominal wall or adjacent structures by friable adhesions, but no evidence of other pathology is noted in these organs. The infarcted area is usually 3 to 6 centimeters in greatest dimension, although an area 8x12 cm. has been described. The infarct usually occurs in the right half of an omentum well supplied with fat. The thickness of the omentum obviates the possibility of torsion being the underlying etiology of so small an area of infarction.

Microscopically the lesion reveals interstitial hemorrhage, veins engorged with red blood cells and perhaps marginal leukocytes. There may be platelet thrombi, local areas of focal inflammation and fat necrosis.

The disease has been reported in both male and female adults between 25 and 63 years of age. Where mention was made, the patients were described as well-nourished or obese and had omenta well supplied with fat. Pines and Rabinovitch suggested that sudden motion could stretch the vessels of the omentum and cause enough endothelial injury to produce subsequent thrombosis and infarction. A fatty omentum would predispose to such trauma. Totten suggested that the lesion usually followed a heavy meal. At that time the omentum would be laden with blood, which might stagnate in its more dependent portion; in such a case,

sudden motion might cause a tear in one of the delicate vessels and result in local interstitial hemorrhage. Since the onset of symptoms is sometimes sudden, sometimes gradual, it is difficult to establish any time relations between meals, motion and onset of infarction. The most constant finding remains the site of the lesion.

CASE REPORT

R. W.—A white male farmer, aged 25, entered the hospital September 13, 1951. Four days prior to admission he developed a pain under the right costal margin. The pain was aggravated by cough and deep respirations but was not severe enough to keep him from his farm work. On the day prior to admission the pain had shifted to the right lower quadrant and become crampy in nature. He had several watery bowel movements, and on the day of admission had noted frequency of urination as well as radiation of pain along the right testicle.

Physical examination revealed an acutely ill white male whose blood pressure was 120/80, pulse 84 and the temperature 99.6°. Positive physical findings were restricted to the abdomen where considerable right lower quadrant tenderness and muscle spasm were found. Rebound tenderness was referred to the right lower quadrant. Rectal examination revealed increased tenderness on the right side. Bowel sounds were active and of normal pitch. A leucocytosis of 10,800 was present with 81% neutrophils and 6 band forms,



Fig. 1: A photograph of the surgical specimen showing a sharp line of demarcation between infarct and normal omentum. Note the density of the fatty deposit in the omentum.

Submitted July 25, 1952.

From the Surgical Service of the Veterans Hospital, Omaha, Nebraska.

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FEBRUARY, 1953

10 lymphocytes and 3 eosinophils. Urinalysis was essentially negative. Roentgenograms of the chest and abdomen were non-contributory.

A diagnosis of acute appendicitis was made, and a laparotomy was advised. At operation it was noted that the peritoneal space was edematous and the peritoneal cavity contained serosanguineous fluid. The appendix was visualized and except for some superficial injection appeared normal. Exploration then revealed a segmental infarction of the omentum. The infarct was triangular in shape (about 3x4 cms.), red-purple in color and occupied the lower right corner of the omentum. It was easily prolapsed into the wound and excised. The appendix was also removed and the abdomen was closed. The patient was discharged on the 7th postoperative day.

The pathologist's report was: "The specimen is a 4x3x1.5 cm. mass of fat tissue. At one margin there is a sharply defined, wedge-shaped area which is firm and dark reddish-brown in color. Microscopic section shows considerable recent hemorrhage through the fatty tissue and many areas of inflammation, focal in nature, in which there is an infiltration of phagocytes and a few lymphocytes. There is some beginning fibroblastic proliferation in these areas."

SUMMARY

The clinico-pathologic picture of idiopathic segmental infarction of the greater omentum has been reviewed and a case report presented.



Fig. 2a: A low magnification microphotograph showing the area of infarction. Note interstitial hemorrhage and the thrombosed vein. The left half of the picture shows fibroblastic proliferation and infiltration by macrophages along the line of demarcation.

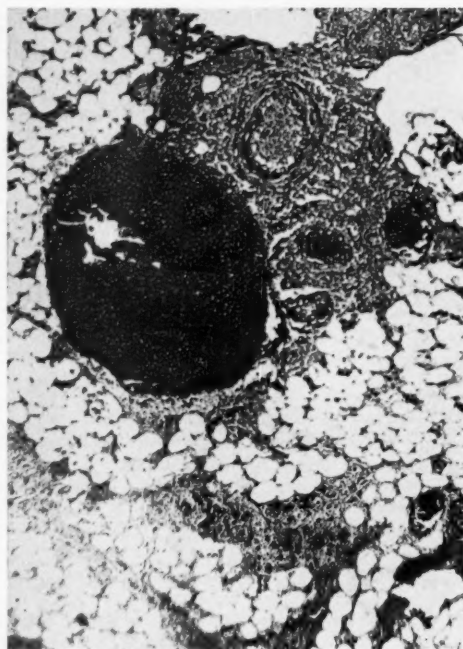


Fig. 2b: A microphotograph of a vascular complex in the infarcted area showing thrombosis of the vein; the accompanying artery contains only a few erythrocytes; interstitial hemorrhage is noted in the surrounding fat.

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A CLINICAL EVALUATION OF DIPHENMETHANIL METHYLSULFATE IN THE TREATMENT OF PEPTIC ULCER DISEASE

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DRUG. Diphenmethanil methylsulfate has been used for nine months in patients with active peptic ulcer to determine its effectiveness as an adjunct to the accepted regimen in peptic ulcer management. The drug is a quaternary ammonium compound effective orally and parenterally as an anticholinergic and autonomic blocking agent. Its formula, pharmacology, and toxicity have been adequately described in the literature (1-4).

Case Selection. One hundred and twenty-four highly cooperative patients with intelligence and understanding above average were chosen for this study from a large group seen in private practice. Many patients, among them 12 physicians, were referred by surgeons as a last resort to medical management prior to gastric surgery. Because of the likelihood of peptic ulcer to recur and the tendency to spontaneous remission and exacerbation early in the course of the disease, cases were chosen where symptoms had continued for more than a year, previous medical management had failed, or a complication had developed. In all cases, a constant radiographic fragrance was present on serial x-ray examinations and a typical history of peptic ulcer pain was given. Table I shows the ages and sex distribution of the patients.

TABLE I
AGE AND SEX DISTRIBUTION OF PATIENTS

Age	Males	Females
11-20		1
21-30	7	11
31-40	13	22
41-50	19	13
51-60	9	16
61-70	4	8
71-80		1
Total	52	72

The study of each patient included a history of digestive symptoms throughout the patient's life, an analysis of precipitating factors, a general history, physical examination, radiographic examination, two-hour fractional gastric analysis, sedimentation rate, hematocrit, urinalysis, and stool examination. Other tests were used only when indicated.

Of the entire group, 9 patients had hematemesis, 18 melena. Five patients had previously had perforations, 30 had penetrating ulcers with accessory pockets. Two radiographic examinations each demonstrated a prolapse of gastric mucosa through the pylorus in 12 patients. In 30 patients, the duodenal cap was narrowed or deformed sufficiently to produce secondary gastric hypertrophy and dilatation.

In evaluating the response to previous therapy, the patients fell into six groups. Some had received a rigid diet, that is, a strict Lenhart regimen of milk every hour, others a moderate diet consisting of soft, bland foods with or without antacids and anticholinergic

drugs. Patients failing to respond to antacids or other anticholinergic drugs *alone* were excluded. An attempt was made to include patients failing to respond to methantheline bromide. Table II summarizes the responses to previous therapy.

TABLE II
RESPONSE TO PREVIOUS THERAPY*

	Successful No. Patients	Unsuccessful No. Patients
Rigid diet	25	9
Moderate diet	3	37
Moderate diet with methantheline bromide	2	22
Total	30**	68

*Twenty-six patients with ulcer complications, having no previous therapy, are not included in Table II.

**Thirty patients indicated as previously successfully healed were treated for a recurrence. All were previously healed roentgenographically and remained symptom free for a minimum period of twelve months or more.

Methods. Patients were informed as to the nature of peptic ulcer disease and the rationale of therapy (5). Hourly milk, in some instances an interval antacid through the third week, dimethylaminopropylphenothiazine, a bland colloid bulk laxative if constipation occurred, and vitamins were prescribed. The diet was increased stepwise at two to three week intervals by the addition of cooked cereals, cream soups, and puddings to an eight-feeding level including toast, crackers, and eggs. It was then reduced to six feedings and some vegetables, fish, brains and sweetbreads, and lastly chicken added. The final diet included milk between meals but no fried, highly seasoned, secretagogue, or rough foods. One hundred and two patients also received initially a dosage of 100 mg. diphenmethanil methylsulfate* every six hours. In an additional 22 patients, the drug was added when it was found that the diet level could not be raised without the recurrence of symptoms. Each patient was seen every week and questioned as to symptoms and side effects.

Results. Of the 124 patients, 117 have responded favorably to medication with diphenmethanil methylsulfate. Symptoms disappeared from 103 patients within twenty-four hours. All were symptom free in seven days.

Among 106 patients remaining asymptomatic under treatment, 80 have shown radiographic evidence of healing, 14 are not completely healed, 12 are yet to be examined by x-ray. Five marginal ulcers healed completely within four months. In 7 patients with stenosis of the duodenal cap to a degree that a normal diet could not be attained without surgery and with an ulcer proximal to the stenosis, gastrectomy and vagotomy were done after eight to twelve weeks of medication.

*Supplies of the drug as Prantal Methylsulfate were furnished by Dr. Jeremiah Moynihan, Medical Service Department, Schering Corporation, Bloomfield, N. J.

and the prescribed diet. At operation, the surgeon and pathologist found the ulcer crater completely healed in 6 patients, unhealed in one. The latter patient had failed to take medication regularly and to follow dietary restrictions.

Therapy was unsuccessful in 6 patients because of failure of patient cooperation in observing medicine and food spacing and dietary restrictions. One of these patients was among those with stenosis of the duodenal cap. Partial amelioration of symptoms and some reduction in the ulcer crater seen radiographically occurred in a woman who had had a total thyroidectomy and thoracolumbar sympathectomy. She did not become completely asymptomatic. Medication was discontinued in one case because of urinary retention.

Thirty patients had two-hour fractional gastric analyses on the full oral dosage and continued to maintain Grade 3 and 4 extragastric* curves although clinically asymptomatic and radiographically healed. Duplicate analyses with and without medication were made on successive days in 11 patients. In 3 patients, the height of the curve or the extragastric feature was modified; neither was affected in 8. Between the initial and final radiographic examinations on 80 patients, gastric wave patterns and rates, stomach emptying, and location of the barium meal were compared fluoroscopically at the beginning of the meal and again in thirty minutes. Except where a high dosage of diphenmethanil methylsulfate had been given intravenously, changes appeared to depend upon the degree of narrowing of the duodenal cap and shifts in the patients' attention from apprehension to a discussion of food, rather than medication. This lack of evidence of an effect on the gastric secretory and motor patterns is at variance with *in vitro* and animal experiments with diphenmethanil methylsulfate. However, a lack of correlation between laboratory and clinical application is not uncommon.

SIDE EFFECTS AND COMPARISONS WITH OTHER ANTICHOLINERGIC DRUGS. At a dosage of 100 mg. four times daily, no mydriasis, cycloplegia, or dryness of the mouth occurred among the 124 patients in this study. Five elderly males with prostatic enlargement had difficulty in voiding, necessitating discontinuance of doses even of 50 mg. in one. Prostatic massage and education of the patient to void at the end of each dose, enabled the other 4 to continue medication. Two patients complained of burning subxiphoid dysphagia with a sensation of food sticking, reproducible when an RR barium capsule was observed to stick in the esophagus at the aortic impression. Longer chewing to insure better salivary lubrication of the bolus relieved this complaint without discontinuance of the drug.

The supply of diphenmethanil methylsulfate was irregular during the first four months of the study so that 70 patients were regularly shifted to and from atropine and methantheline bromide. This afforded an excellent opportunity to compare the three drugs. A greater incidence of dryness and of cycloplegia occurred with methantheline bromide than with diphenmethanil methylsulfate; the incidence was greatest with atropine. A comparable incidence of urinary retention occurred with the first two drugs. Patients disliked the taste of methantheline bromide and many complained

of a transient burning dysphagia. None occurred with atropine. It did cause dermatitis in one patient.

About 60 per cent of the male patients experienced decreased libido or impotence with an effective dosage of any of the three drugs. A similar effect could not be elicited and did not occur spontaneously in female patients.

Patients in time become tolerant to the side actions of all three of the anticholinergic agents studied. It was found that with gradual increases in dosage, side actions do not appear unless the drugs are reintroduced at the previous level without a period of increasing tolerance when once they have been discontinued. With reduction in dosage, omission, or discontinuance of an anticholinergic drug, symptoms tend to recur with minor food discrepancies, improper meal spacing, or tension.

Higher doses can be maintained without side actions with a combination of anticholinergic drugs than with any one alone. A daily dosage of 1/30 grain atropine sulfate with 800 mg. diphenmethanil methylsulfate or methantheline bromide attained gradually has been tolerated by 12 patients for six months with only xerostomia and blurring of close vision. All 12 patients, 8 of whom were physicians, had advanced longstanding organic changes, refused to consider surgery, had failed to improve on a rigid diet, but both radiographically and clinically showed improvement on sustained dosage with careful diet. When high dosage is to be maintained, chewing gum or hard candy overcomes most of the dryness caused by medication; accommodation glasses for reading or sewing overcome the blurring. If the patient is to be exposed to bright sunlight, tinted glasses are advisable.

SUMMARY AND CONCLUSIONS

One hundred and twenty-four patients with advanced or complicated stages of peptic ulcer disease have been treated for nine months with diphenmethanil methylsulfate as an adjunct to a restricted diet. One hundred and seventeen patients responded favorably to the drug. Gastrectomy and vagotomy were performed after medical therapy in 7 patients with surgical indications. The ulcer had healed in all except one intractable patient. Five marginal ulcers healed without surgery. One hundred and six patients have remained asymptomatic. Eighty of these are healed radiographically, 14 show satisfactory but not yet complete healing, and 12 are yet to be examined.

Diphenmethanil methylsulfate is a distinctly useful adjunct to the management of peptic ulcer disease. Fewer undesirable side actions accompany the use of diphenmethanil methylsulfate than that of other effective anticholinergic drugs.

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*Extragastric is used to denote an analysis in which the free acid is higher at the end of the second than of the first hour.

ADENOCARCINOMA OF THE APPENDIX: REPORT OF TWO CASES

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PRIMARY CARCINOMA of the appendix is a rare disease. But perhaps it is not as uncommon as the fully reported cases in the literature would indicate. Thus, Sillery (1) has recently cited 116 cases of carcinoma of the appendix which were clearly differentiated from carcinoid tumors of this organ. But the majority of these cases were merely mentioned without details. We have been able to collect from the literature only twenty-nine cases of carcinoma of the appendix in which data were adequate for clinical and pathological analysis. To these we add two cases of our own. None of the reported cases appear to have been diagnosed clinically. Hence much has still to be learned concerning the preoperative diagnosis of this disease. Little is known concerning the frequency, route and extent of metastases or of the prognosis of carcinoma of the appendix, and the best surgical procedure in dealing with it.

The rarity of primary carcinoma of the appendix can best be appreciated by comparing its incidence with that of carcinoids of the appendix and with that of carcinoma of the colon. In statistical studies of tumors of the appendix by Schuldt (2), by Harryman (3), and by Uihlein and McDonald (4), approximately 86 percent were carcinoids and 14 percent were adenocarcinomas and "mucoid" carcinomas. Bieren (5) has recorded 254 cases of carcinomas of the colon and only two of the appendix. Ehrlich and Hunter (6) analyzed the tumors of the gastrointestinal tract among "813 persons of military age during World War II" and mentioned, without details, seven carcinomas of the appendix. Among 1618 autopsies at Alexian Brothers Hospital in Chicago, there were 67 carcinomas of the colon (including the rectum) and none of the appendix. In two cases that we report herewith the appendix was removed surgically and these are the only cases of this disease in our surgical material.

CASE REPORTS

Case I—F. M., a seventy year old white male, previously in good health, entered Alexian Brothers Hospital, in Chicago, in September, 1947 on the service of Dr. A. S. Miller. He complained of anorexia, nausea and moderately severe pain in the right lower quadrant of his abdomen. These symptoms had been present for twelve hours and during the first few hours of this time there had been three bowel movements. His temperature was 98.6° F.; his pulse was regular and 68 per minute; respirations were 22 per minute; blood pressure was 160/90 millimeters of mercury. There were moderate tenderness and slight rigidity in the right lower quadrant.

Laboratory examinations revealed 4,740,000 red blood cells per cubic millimeter and 15 grams of hemoglobin per 100 milliliters of blood. There were 15,300 leucocytes per cubic millimeter of which 88 percent were polymorphonuclear neutrophils; 8 percent, lymphocytes; and 4 percent monocytes. Urinalysis was essentially negative.

At operation, approximately forty hours after the onset of symptoms, a ruptured, partially gangrenous appendix was removed. Penicillin was started prior to surgery and was con-

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tinued after the operation. The patient's course was uneventful and he was discharged in good condition on the eleventh hospital day. At last report four years later he was still alive and well.

At gross examination, the appendix was almost completely buried in inflamed loosely adherent omental fat. It measured 5.5 centimeter in length and up to eleven millimeters in diameter. In its mid portion there was a small irregular opening at the site of perforation. The external surface of the appendix in this region was dark gray to brown and shaggy. The lumen contained red brown soft material except at a place one centimeter from its base, where a gray-white polyp-like mass, 3x4 mm. projected into the lumen. The wall of the appendix, on cut surface was generally gray-white mottled with red brown, except near the base where the wall was thickened and gelatinous.

Microscopically, the mucosa had largely disappeared as a result of ulceration. The wall was variably and, in places, intensely, infiltrated with pus cells. In the proximal portion a polypoid mass projected into the lumen. This was composed of atypical glands and papillary processes. The atypical glands were lined and the papillae were covered, with robust columnar epithelial cells with overriding, hyperchromatic nuclei a few of which were in mitosis. Similar cells invaded the wall. The grossly recognized gelatinous areas in the wall of this appendix were masses of mucus with only a few cells along their margins. (Fig. 1). No evidence of extension beyond the appendix or of metastases were observed at operation, although, under the circumstances, such examination could not be thorough.

In summary: This appendix was the site of an adenocarcinoma of the "colon" type which apparently arose from a polyp. Its location in the proximal portion led to obstruction, distension, necrosis and perforation of the appendix.

Case II—J. S., a fifty-three year old white man, entered Alexian Brothers Hospital, in Chicago, October 12, 1950, on the service of Dr. V. J. Jacey. He complained of pain in the right lower quadrant of his abdomen and nausea without vomiting both of one week's duration. His temperature was 100.4° F.; pulse 120 beats per minute; blood pressure 165/95

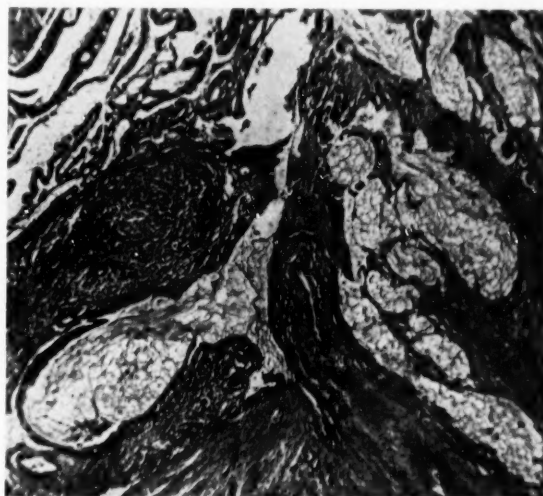


Figure 1.

Fig. 1: Adenocarcinoma of the Appendix showing invasion of the wall and the mucoid character of the tumor.

mm. Hg. On physical examination his heart and lungs appeared to be normal; tenderness and rigidity were present in the right lower quadrant. Laboratory examinations revealed 5,200,000 red blood cells per cubic millimeter with 15 grams of hemoglobin per 100 milliliters of blood. His leucocyte count was 18,450 with 92 percent polymorphonuclears, 7 percent lymphocytes and 1 percent monocyte. Urinalysis and Kahn tests were negative.

Two and a half hours after admission an appendectomy was done and revealed the following: "gangrenous, ruptured appendix surrounded by purulent fluid and adherent to the pelvic peritoneum, the omentum covering the entire mass." During the first and second post operative day his temperature ranged from 100° to 101° F. and then returned to normal. He was treated with penicillin, made an essentially uneventful recovery and was discharged on the eighteenth post-operative day. He is apparently well fifteen months after the operation.

The gross specimen received in the laboratory was an irregular, mottled red, gray and yellow (fat) mass which measured 1.5x3.0x3.5 cm. A part of this mass was an appendix that measured 12x30 mm. The wall of the appendix was up to 5 mm. thick and was dark red in color; the lumen was filled with thick gray-brown fluid. The intense inflammatory process completely obscured the adenocarcinoma that was found on microscopic examination.

In five sections made from this appendix the lumen was filled with bloody pus; the greater part of the mucosa was necrotic and had disappeared; and the entire wall was extensively and, in some places, massively infiltrated with pus cells. Three sections contained a tumor growth consisting of low columnar and "signet-ring" cells either arranged about a small lumen or forming small masses and cords in the sub-mucosa and muscular coats. No tumor cells were found in the part of the meso-appendix included in the sections.

The histologic diagnosis was: Acute, diffuse, purulent appendicitis complicating adenocarcinoma of the appendix.

DISCUSSION

Analysis of the literature on primary carcinoma of the appendix is a difficult task. (1) Prior to about 1932, no distinction was made between carcinoid tumors, first differentiated by Masson (7), in 1928, and true carcinomas, and all such tumors were reported as carcinomas of the appendix. Even as late as 1942, some authors (8), were classifying carcinoid tumors of the appendix as "adenocarcinoma, Grade 1." (2) Numerous articles present statistical analysis of thousands of appendices removed surgically, listing the number of tumors of each type without details pertaining to individual cases. Thus, Woodruff and McDonald (9), mentioned ten cases; Ehrlich and Hunter (6), 7 cases; Harryman (3), six cases; Reitz (10) and Bieren (5), 2 cases each. Such reports are of value only in attempts to determine the relative frequency of such tumors. (3) Approximately one-third of true carcinomas of the appendix occur in the proximal part of this organ. Vance (11), has called attention to the difficulty of determining whether a given carcinoma in this location actually originated in the appendix or arose in the caecum and extended into the appendix. On the other hand, Foot (12), comments that "the so-common carcinoma of the caecum may surround the ostium of the appendix completely, but it appears never to transgress its portals." (4) Occasionally, local extension of carcinoma of the appendix is so great that its exact origin cannot be determined with accuracy. Thus, Leonardo (13), reported two cases under the title of "carcinoma of the appendix," but in the text of his paper he described one as a "primary mucoid carcinoma of the appendiceal region."

Applying rigid criteria to cases reported in the lit-

erature, Lesnick and Miller (14), collected twelve in which they believed that the diagnosis of primary carcinoma of the appendix was justified. To these they added five of their own, bringing the total accepted cases to seventeen in 1949. From our review of the literature we have added twelve more cases—one each by Marks and Whitaker (15), by Lee and Blaine (16), by Hughes (17), by McCampbell and Dickinson (18), by Kaplan and Radice (19), by Pangaro et al (29), and two cases by Sillery (1), all published since the paper of Lesnick and Miller (14) appeared; and two by Wells and Joffe (21) and one by Montgomery and Johnson (22) not included in Lesnick and Miller's (14) collection. To these twenty-nine cases we add two of our own to make a total of thirty-one cases of primary carcinoma of the appendix suitable for clinical and pathological analysis.

These thirty-one cases were about equally divided among men and women. The ages ranged from twenty (Darnell and Kilduff (23)) to eighty-three years, with a mean age of 49.2, and a standard deviation of twenty-three years. Four patients were between the ages of twenty and thirty and four were over seventy. The remainder were almost equally distributed among the four intervening decades.

None of these thirty-one collected cases was correctly diagnosed clinically. In at least seventeen the clinical diagnosis was acute appendicitis, which was correct as far as it went. The appendix had perforated in eight cases (Harryman (3), Schuldt (2), Heine (24), Lesnick and Miller (14), Uihlein and McDonald (4), Kaplan and Radice (19), French (20), and in our case 1). A para-appendiceal abscess was present in five cases (Bieren (5), Chomet (26), Young and Wyman (27), Harryman (3), and in our case 2). Hughes' (17) case presented the most unique complications, an appendico-ileostomy with an appendico-ileo-cecal intussusception. In five cases (Young and Wyman (27), Chomet (26), Waugh and Findley (28), and Frauenthal and Grausman (29)) appendectomy was an incidental procedure during an operation for some other purpose, such as hysterectomy. The carcinoma was an unexpected, and perhaps a disconcerting, finding.

Carcinoma of the appendix may occur in any part of that organ. In twenty-one cases in which the site of origin was stated, the tumor was in the proximal portion in seven (33 percent); in the midportion in five (24 percent); and in the distal part in nine (43 percent).

Since most of the reported cases of carcinoma of the appendix have been observed in appendices removed at surgical operations, knowledge concerning the frequency and distribution of metastases from these tumors is very limited. In general, mucus-producing carcinomas are said to be more likely to spread to the peritoneum, while adenocarcinomas of the "colon" type more frequently metastasize to lymph nodes and liver. Local recurrence has been reported by Lesnick and Miller (14) and by Frauenthal and Grausman (29). Of special interest are the cases of Waugh and Findley (28), and Case 2 of Lesnick and Miller (14), in which metastatic tumors of the Kruckenberg type developed in the ovaries. In four of the cases of Woodruff and McDonald (9), there was "intracystic adenocarcinoma of the ovary." The only reference to metastases outside the peritoneal cavity that we have found are in

one of Bieren's (5), patients who died of generalized metastases two years after appendectomy and in one of the cases of Wells and Joffe (21), in which there were implantation tumors on the pleura. A third case that came to autopsy (Pangaro, et al (20)) had metastases in the regional lymph nodes and liver and implantations on the peritoneum and diaphragm.

Mucocele associated with primary carcinoma of the appendix has been reported by Lesnick and Miller (14), by Waugh and Findley (28), by Heintz (24), by Rosenblatt and Robertson (30) and by Uihlein and McDonald (4), Waugh and Findley (28), believed that malignant change may occur in mucoceles and thus give rise to carcinoma of the appendix. Pseudomyxoma peritonei associated with primary mucus-producing carcinoma of the appendix has been reported by Harryman (3), by Hobart and Nesselrod (31), by Ehrlich and Hunter (6), by Marks and Whitaker (15), and Waugh and Findley (28). Willis (32) thinks that it is "debatable whether the appendiceal lesion responsible for pseudomyxoma is usually truly neoplastic or only an obstructive mucocele."

Primary carcinomas of the appendix are very frequently accompanied by acute appendicitis and may be overlooked on gross examination, as in our case 2. They may take one of several forms. In the first place, they must be differentiated from carcinoid tumors which are nearly always found in the tip of the appendix; are distinctly yellowish and solid, not cystic, on cut surfaces. In the appendix they are usually benign and, therefore, do not ordinarily metastasize. Carcinoid tumors lie in the wall of the appendix and give the appearance of invading along lymphatics, but are covered by an intact mucosa. They consist of heavy cords and masses of fairly small polyhedral, round or oval, chromophile and argyrophile cells which do not produce mucus and do not form distinct acini. Their nuclei are small and compact and mitoses are rare.

(1). McCollum and Pund (33) have recently reported 16 cases of "preinvasive adenocarcinoma," of the appendix, characterized by irregular branching and bizarre structure of the mucosal glands, pronounced excess secretion of mucus; hyperchromatic vesicular nuclei which, at times, varied considerably in size and shape and had a frequent tendency to stratification. Fourteen of these cases showed inflammatory changes or residua of such changes in the appendix.

(2) Maisel and Foot (34), described a malignant adenoma in the appendix of a woman who had "multiple polyposis" of the entire large bowel. Several of the polyps in the colon were malignant. In the appendix there was a polypoid mass, approximately 2.5 centimeters in diameter. It had not invaded the wall of the appendix but exhibited the atypical epithelium and structure of a malignant adenoma. In one of Uihlein and McDonald's (4), cases and in our case 1, (Fig. 1) the adenocarcinoma of the appendix originated in a malignant polyp.

(3). "Muroid" or "colloid" carcinoma may arise in any part of the appendix. Grossly, they are pearly gray or pearly white and on cut surfaces are cystic and gelatinous. The cystic cavities in these tumors frequently have papillary growths into their lumens, (Crile and Glenn (35); Wells and Joffe (21); Uihlein and McDonald (4)). The volume of mucus pro-

duced by these tumors may exceed the volume of cells. Mitoses are rare. This type of carcinoma may be associated with pseudomyxoma peritonei. Woodruff and McDonald (9) classified ten of their cystic carcinomas of the appendix as "Adenocarcinoma, Grade 1," but without details.

(4). Typical adenocarcinomas of the appendix closely resemble the same type of tumor in the colon. They are found anywhere along the course of the appendix, are grayish in color and usually ulcerate through the mucosa. They may be either polypoid or purely adenomatous in character. They are composed of robust, columnar epithelial cells that arrange themselves about a lumen or cover the branches of a polyp. Mitoses are more numerous than in the cystic form. The tumor cells may produce mucus but not in such quantities as in the "muroid" type. These carcinomas may metastasize to the lymph nodes or liver.

(5). Certain variations from the above types have been observed. In cases reported by Marks and Whitaker (15), and by Young and Wyman (28), tumor cells containing varying amounts of mucus grew in heavy cords in the wall of the appendix with little tendency to form acini, thus suggesting carcinoma simplex. In the cases reported by Lee and Blaine (16) and in one of those of Young and Wyman (28), the parenchyma of the tumor was distinctly adenomatous in character, but the stroma was so abundant as to give the growth the appearance of a scirrhous carcinoma.

Carcinomas of the appendix, of all types, usually lead to obstruction of the lumen and symptoms of acute appendicitis. They are, therefore, frequently removed surgically early in the course of the disease before metastases or even extensive local growth has occurred. The prognosis, even after simple appendectomy, as in our cases, is better than the average for tumors of other parts of the gastrointestinal tract.

SUMMARY

Two cases of primary adenocarcinoma of the appendix are reported and the literature reviewed. The patients were white males aged seventy and fifty-three years, respectively. In each case the carcinoma was complicated by acute diffuse appendicitis with gangrene and perforation. Neither patient has had a recurrence, one after four years, the other after fifteen months. Paradoxical as it may seem, acute appendicitis may be a life-saver for patients with primary carcinoma of the appendix because it leads to early removal of the tumor while it is still a local lesion.

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ABSTRACTS ON NUTRITION

WALKER, W. AND HUNTER, R. B.: *Single massive dose of vitamin B₁₂ in untreated pernicious anemia.* Brit. Med. J., Sept. 13, 1952, 593-595.

Fifteen patients with untreated pernicious anemia were given a single parenteral dose of 1 mg. of vitamin B₁₂ and followed until relapse. One patient remained normal for as long as 356 days after such a dose. The earliest relapse occurred in 128 days, excluding one case with hepatic insufficiency in whom relapse occurred in 81 days. The marrow showed signs of megaloblastic reversion 40 to 50 days before there was any sign of relapse clinically or in the blood. One patient with cord changes required resumption of treatment after 6 weeks. These findings do not justify, without further trials, the routine treatment of pernicious anemia by 1 mg. doses of vitamin B₁₂ at long intervals.

STRIKER, C.: *Diabetes mellitus—an orientation.* Illinois Med. J., 102, 4, 235-241.

In this brilliant article, Cecil Striker shows, above all, the inconceivably complicated nature of diabetes. His thinking is original and, as everyone knows, based on wide experience. He does not make too much distinction between the advantages of the Joslin and the Tolstoi ideas of diet, because few patients adhere to their

diets very strictly. He insists, however, on his patients eating a constant type of food intake averaging between 250 and 300 gms. of carbohydrate measured in terms of household measurements. He does *not* believe that the level of the blood sugar is an important aspect of the control of diabetes. He advises against bringing the blood sugar down to the accepted norm, especially in elderly patients. He shows that a patient may sit up in bed and shave himself, with a blood sugar of 22 mgms. Furthermore, he has seen definite hypoglycemic symptoms dramatically relieved by 50 c.c. of a 25 percent glucose solution in a patient with a blood sugar of 425 mgm.

KINSELL, L. W., PARTRIDGE, J. W., BOLING, L. AND MARGEN, S.: *Dietary modification of the metabolic and clinical effects of ACTH and cortisone.* Ann. Int. Med., 37, 5, Nov. 1952, 921-929.

Some of the untoward clinical and metabolic effects of ACTH and cortisone, which seriously interfere with their clinical application, may be lessened or prevented by specific dietary modifications. The main considerations in the construction of an "ACTH-cortisone diet" are high protein, adequate calories, low carbohydrate, low salt and high potassium. During periods of diuresis, sodium may need to be increased.

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DAESCHNER, C. W.: *A brighter outlook for the juvenile diabetic patient*. Texas State J. M., 48, 10, Oct. 1952, 694-697.

The author lays great stress on the importance of maintaining emotional equilibrium in young diabetics. Wisely, he also stresses the necessity of being on the alert for the development of pulmonary tuberculosis. He admits that there is no real proof that "good control" is essential, but feels that poor control results uniformly in early onset of degenerative vascular disease. This statement appears contradictory of itself. He feels that blood sugar values should be maintained as near the normal range as is consistent with a relatively normal and useful life for the patient.

PAGE, I. H. AND BROWN, H. B.: *Induced hypercholesterolemia and atherogenesis*. Circulation, VI, 5, Nov. 1952, 681-687.

Feeding cholic acid and cholesterol to hypothyroid rats produced severe hypercholesterolemia and abnormal serum beta lipoproteins, as well as very fatty livers, and heavy lipid infiltration of kidneys, heart and aorta. However, there was no atherosclerosis, apparently because there was no tissue reaction or response to the infiltrating lipid.

ROSS, P. H. AND GIBSON, M.: *Group diabetic management in a state mental hospital*. Illinois Med. J., 102, 3, Sept. 1952, 196-201.

The authors describe an interesting method of controlling diabetics in a mental institution. There were from 45 to 50 diabetics in a female infirmary holding 152 patients, which is certainly an extremely high incidence. Two nurses, and sometimes only one nurse, had charge of these cases. Wisely, the patients were divided into two groups—those receiving 25 units or less of insulin daily and those receiving more than 25 units. Naturally greater attention was required for the second group. Urine samples taken before meals were run on 3 consecutive days each week. Blood sugars were taken as needed. Two cases of moderate insulin resistance were encountered, one of whom required 345 units of regular insulin daily. Special diets were, for obvious reasons, out of the question. The results, considering the difficulties, were excellent. The authors suggest the appointment of a diabetic control physician for the institution. Admission blood sugars should be routine. Special briefing for the assisting nurses should be given.

WOODHILL, J. M.: *A simplified table of food composition for use in the evaluation of Australian diets*. Med. J. Australia, 39, II, 6, Aug. 9, 1952, 188-192.

The table presented by Woodhill is interesting, and represents a simplification of more complex tables which have appeared in Australia during the past 10 years. By grouping together foods possessing relatively the same proportion of nutrients, a result is obtained which is just as accurate, and more usable, than those where each food is separately analyzed. Woodhill fortunately recognizes the essential error in all food computations because foodstuffs have inherent biological variations due to differing genetic capabilities of the

plants or minerals, to climatic environment, to soils and maturity.

SQUIRES, B. T.: *Serum iron in the Tswana (Bechuanaland)*. South African J. Med. Sci., 17, 1, June 1952, 1-2.

Serum iron determinations were made on 48 adult Tswana males, inhabitants of Bechuanaland Protectorate. The basic constituents of their diet were Kaffir corn, with meat and milk when available, indigenous fruits and vegetables in season, and Kaffir beer. The iron intake on this diet was estimated to be from 30-40 mgs. daily, and since Wintrobe regards the daily iron requirement as 11-17 mgs., there was no reason to suspect iron deficiency. The hemoglobin findings lay between 12-14 gms. percent which is within normal limits for these people. Estimations of the serum iron by a colorimetric method involving the resection of ferrous iron with ferricyanide were made on the 48 subjects and the range of values lay between 42-410 micrograms Fe/100 ml, with a mean of 133, and standard deviation of 79. This wide range of values is not very different from that found by other investigators on American and European subjects.

KHEDROO, L. G. AND DiGILIO, M. M.: *Transient hyperglycemia and glycosuria associated with the acute abdomen*. Illinois Med. J., 102, 3, Sept. 1952, 210-213.

Two cases, one of gangrenous appendicitis and one of a gallstone blocking the terminal ileum, showed elevated blood sugar readings before surgery and before the administration of insulin, and both showed urinary glucose. It seems likely that the pituitary-adrenal system, influenced by stress, may well be responsible for these transient disturbances in glucose metabolism.

DEAN, R. F. A.: *The treatment of Kwashiorkor with milk and vegetable proteins*. Brit. M. J., Oct. 11, 1952, 791-796.

Kwashiorkor, as it occurs among children in the region of Kumpala is almost certainly a protein-deficiency disease. Dean successfully treated the disease with diets containing large amounts of protein. Concentrated milk protein gave the best results, but mixtures of plant proteins were also effective. Plantains (cooking bananas) and sweet bananas were excellent vehicles for the proteins, and provided a form of carbohydrate which was well tolerated.

TROWELL, H. C. AND DAVIES, J. N. P.: *Kwashiorkor. 1. Nutritional background, history, distribution and incidence*. Brit. M. J., Oct. 11, 1952, 796-798.

Kwashiorkor is one of the major nutritional diseases and has been recognized by many African tribes, who have their own names for it. The disease is extremely common in many parts of the tropics and subtropics and attacks children at a time when their protein requirements are high. It occurs in Africa, in tropical America, Asia, and in some of the poorer towns in the South of Europe. African children grow well while on the breast, but after weaning, many fail to grow, develop brown hair, and have diarrhea. Such children are suffering from mild kwashiorkor. Tropical infections complicate but do not cause the disease.

WETZEL, N. C., HOPWOOD, H. H., KUECHLE, M. E. AND GRUENINGER, R. M.: *Growth failure in school children: further studies of vitamin B₁₂ dietary supplements*. J. Clin. Nutr., 1, 1, Sept.-Oct. 1952, 17-31.

While this contribution is somewhat "technical," the general conclusion from the work done was that vitamin B₁₂, given orally, does exert a growth-promoting effect when given as a dietary supplement to children in growth failure. Some of the children showed improvement also in behavior, attitude and school work.

EDITORIAL

BLOOD SUGAR

The further our investigations are carried in diabetes mellitus, the more one is impressed by the fact that this disease is an inconceivably complicated one, from almost every aspect. One point in the practical management of the disease which has confused not a few clinicians is the value of routine and continued blood sugar estimations. While everyone will not agree with the following statement, it has long been the impression of the writer of this editorial that the value of blood sugar estimations has been over-emphasized. In every city there are internists who insist on using sufficient insulin to bring the blood sugar level down to a conventional normal. Not infrequently this "treatment of the blood sugar" results in hypoglycemic reactions and such reactions not only militate against the popularity of insulin, but we know today that they may produce lasting injury to the brain. Banting, who discovered insulin, was personally opposed to repeated blood sugar readings in diabetes. Furthermore, he was personally a decided "liberal" in matters of diet. While it may be argued that his discovery of insulin did not of necessity qualify him as a clinician, the truth is that Banting had thought more deeply on these matters than most physicians, and was clinically very successful.

It was a pleasure for me to read a recent article by Cecil Striker (1) because he has found from a very broad clinical experience that the level of the blood sugar is not an important aspect of the control of diabetes. Neither does Striker criticize nor praise either strict dieting or free dieting, because he knows that no matter what we tell patients to eat, their obedience usually is not remarkable. Striker shows that a person with a blood sugar of only 22 mgm. may sit up in bed and shave, while definite hypoglycemic reactions may occur in a patient having a blood sugar of 425 mgm. He points out that it is the *suddenness* of the fall in blood sugar which produces general reactions and not the level from which or to which it may have fallen.

Furthermore, blood sugar estimations are notoriously erroneous, irrespective of the method used. Quite apart from diabetes, we frequently see mild hypoglycemic reactions in persons with hyperinsulinism, even though the level of the blood sugar may be 100 mgm. or more. Striker is to be congratulated in helping to clarify the subject of the value of blood sugar estimations in diabetes.

1. Striker, C.: Diabetes mellitus—an orientation. Illinois Med. J., 102, 4, Oct. 1952, 235-241.

BOOK REVIEWS

MANUAL OF APPLIED NUTRITION. The Johns Hopkins Press, Baltimore, Md., 1952, \$2.50.

This 100 page manual is actually a compendium of the various diets used at the Johns Hopkins Hospital, and represents the Third Edition of a valuable contribution to dietotherapy. No medical disease or surgical condition which requires special diets has been omitted. The expression "soft diet" has, as we know, somewhat differing connotations in different medical institutions. This manual defines precisely what is meant by a "soft" diet at the Johns Hopkins Hospital, and similarly with all other special diets. The latter are in most instances specific modifications of the normal or average diet. One would suppose that the chief value of this book would be to general hospitals everywhere, many of which certainly could profit by adopting the Hopkins system. Then, if the manual were supplied to the members of the hospital staffs, there would be no longer any confusion with regard to diet prescriptions.

PERSONAL AND COMMUNITY HEALTH. C. E. Turner, A.M., D.Sc., D.P.H. The C. V. Mosby Company, St. Louis, 1952, \$4.25.

The present 9th Edition of a popular text leaves practically nothing unsaid with respect to what college students ought to know about the title subject. Nutrition receives adequate description. The hygiene of the various bodily systems is well presented. The second part of the book deals with public health matters, is highly instructive, and includes industrial hygiene. There is no question but what the book should be recommended to any intelligent layman who evinces a desire to know more about hygiene than the physician has time to impart personally.

BONE MEAL FOR HUMAN CONSUMPTION. Rodale, J. I. Rodale Press, Emmaus, Pa., 1952. 65 cents.

This little book of 64 pages quotes from the opinion.
AMER. JOUR. DIG. DIS.

ons of certain dentists and physicians with respect to the problem of calcium intake, and available calcium, with some editorial emphasis on the proposition that the use of bone meal by humans is, or would be, a valuable general health measure. Although Rodale himself apparently is not a physician, but rather the editor of a magazine called *Prevention*, whose policy may seem rather extreme to most physicians (tending toward "organic farming", elimination of sugar, salt and processed foods), we nevertheless feel that the question of using bone meal in the human diet is a legitimate question, and one which ought to receive greater scientific attention. Quite frequently, valuable suggestions have emanated from non-medical sources, although, naturally, the present subject may or may not prove to be of value.

CORTONE: A HANDBOOK OF THERAPY. Merck & Co., Inc., Rahway, N. J., 1952.

Cortone and hydrocortone (compound F) are extensively described in this 124 page text, which is apparently gratis for the medical profession. The diseases, now familiar to most physicians, in which cortisone is beneficial, are dealt with, including rheumatic fever, asthma, inflammatory diseases of the eye, certain skin conditions, certain allergic states, Addison's disease, disseminated lupus erythematosus, bursitis, pulmonary granulomatosis, the Waterhouse-Friderichsen syndrome, adrenogenital syndrome, and other conditions. Cortisone has saved many lives in cases of extreme bronchial asthma not responsive to other agents. The tendency in rheumatoid arthritis is to use smaller doses than at first recommended. The handbook is invaluable to any physician employing these products.

GENERAL ABSTRACTS OF CURRENT LITERATURE

SIROTA, J. H. AND NABATOFF, R. A.: *Effects of Unilateral Renal Hypertension Secondary to Splenorenal Vein Anastomosis on Individual Kidney Function*. American Journal of Medicine, 13:242, August, 1952.

Individual kidney clearances of inulin and p-aminohippurate and the ability of the individual kidneys to excrete sodium, chloride, potassium and water were studied before and during salt-loading in one subject nine months following splenorenal anastomosis for portal hypertension. Prior to salt-loading the kidney subjected to increased renal venous pressure (left) presented significant relative depressions of inulin clearance, urine flow, and sodium and chloride excretion. The depressed urine and salt excretion during this period could be explained entirely on the basis of reduced glomerular activity. During the early salt-loading hyperemia and increased glomerular activity occurred in the right kidney, not in the left. Throughout salt-loading the relative depressions of salt and water excretion by the left kidney were significantly greater than the relative depression of glomerular function. A specific tubular effect of chronic venous congestion is postulated, manifested by increased water and salt reabsorption during salt-loading. The filtration fractions of both kidneys were significantly elevated and became more so during salt-loading. There were no significant differences in potassium excretion by the separate kidneys before and during salt-loading.

NABATOFF, ROBERT A.: *The Portal-Systemic Venous Shunt in the Treatment of Portal Hypertension*. Journal of The Mount Sinai Hospital, 18:292-296, January-February, 1952.

New operative procedures are constantly being proposed for the treatment of portal hypertension. This is prime evidence that a universally satisfactory method of treatment has not yet been evolved. The most promising procedure thus far has been the portal-systemic shunt. The rationale is logical since it is based upon the marked pressure differential between the portal and systemic veins in cases of portal hypertension. The

main advantage of the portacaval anastomosis as compared to the splenorenal shunt is that the portal vein is approximately twice the size of the splenic. However, both procedures usually decompress the portal system sufficiently to prevent recurrent bleeding from esophageal varices.

Follow-up studies have revealed that the liver function remains essentially unchanged following operation. Therefore, if death due to bleeding varices can be averted, an opportunity becomes available for further treatment and possible improvement of the underlying disease process.

FRIEDMAN, R. L. AND WASCH, M. G.: *Carcinoma of the cardia of the stomach as detected by laminagraphy*. Am. J. Roentgen. Rad. Th. 67:6,932, June '52.

Thirteen cases of carcinoma of the stomach are reviewed with an evaluation of air insufflation of the stomach with routine and laminagraphic studies as a means of earlier diagnosis of carcinoma of the cardiac end of the stomach. Of these, ten revealed definite evidence of the tumor, six of which were confirmed by laparotomy; the symptomatology and course of the remaining four cases were clinically beyond doubt. There were three failures by this method: one proved to be cirrhosis of the liver, in the second instance, a patent pylorus prevented a satisfactory outline of the cardia; the third and most disconcerting error was due to a flat serpiginous neoplasm which failed to encroach sufficiently upon the gastric lumen. The method of visualization of the tumor by means of laminagraphy is described. The scalloped margin of the tumor mass, as visualized on the laminagraphic study, is stressed as of diagnostic importance in differentiating an intrinsic tumor mass from extrinsic pressure on the air-filled cardia of the stomach.

Franz J. Lust.

HINKEL, C. L.: *Roentgenological examination and evaluation of the ileocecal valve*. Am. J. Roentgen. Rad. Th. 68, 2, 171, Aug. 1952.

The ileocecal valve can be and should be identified

and evaluated in essentially every barium enema roentgen examination. This is readily accomplished when barium is introduced into the terminal ileum and graduated pressure is applied to this area. The appearance of the filling defect at the valve orifice is dependent upon the site of the implantation, the size, shape and thickness of the lips, and the degree of prolapse of ileal mucosa. There is a wide range of variation. Several factors which tend to produce conspicuous defects are presented, together with two cases of presumably ideal prolapse, which were surgically explored. The authors believe that preparatory catharsis exaggerates the filling defect produced by ileal prolapse. Not all large or peculiar shaped defects can be differentiated with certainty from tumors of the valve lips.

Franz J. Lust.

GAY, B. B., JR.: *Esophageal perforation. A review of etiology with representative case presentations.* Am. J. Roentgen, Rad. Th. 68, 2, 183, August 1952.

The various causes of esophageal perforation have been reviewed and representative cases presented. Only in the past three years has the accuracy of diagnosis of spontaneous rupture of the esophagus been improved. Since 1944 the mortality rate has been lowered by early diagnosis, followed by early operation. In perforation of the upper esophagus the following roentgenographic signs are noted: a) prevertebral soft tissue swelling, b) foreign body if present, c) free retrotracheal and retropharyngeal air, d) fistula demonstrated by lipiodol swallow. In perforation of the lower esophagus the following signs are noted: a) cervical or mediastinal emphysema, b) hydropneumothorax, most frequently on left side, c) mediastinal widening, d) demonstration of perforation by lipiodol swallow. A negative esophagram should not exclude the possibility of esophageal perforation in the presence of suggestive clinical findings. Repeated examinations may be necessary to demonstrate the fistulous tract.

Franz J. Lust.

CHRISTENSEN, W. R. AND SOSMAN, M. C.: *A preliminary report on telepaque, a new cholecystographic medium.* Am. J. Roentgen & Rad. Therapy, 66, 5, Nov. 1951, 764-768.

Telepaque contains 66.68 percent iodine in contrast with priodax which contains 51.38 percent iodine. Using telepaque, six tablets are given at 10 P. M. following an evening meal devoid of fat, and films are taken 10 hours later at 8 A. M. In persons weighing more than 165 pounds, the dose was doubled. Fifty cases were studied and the authors believe telepaque has certain distinct advantages. The percentage of untoward symptoms was low. Direct questioning revealed no symptoms in 78 percent of cases. Dysuria is greatly reduced because telepaque is eliminated via the G. I. tract while priodax is excreted in the urine. The number of stone-containing gallbladders visualized was high. Telepaque deserves a serious clinical trial.

CRILE, GEORGE, JR. AND TURNBULL, R. B.: *The treatment of chronic ulcerative colitis.* Cleveland Clinic Quart., 18, 4, Oct. 1951, 239-245.

Most patients with chronic ulcerative colitis do well without operation, but the 20 percent who suffer from

severe and intractable forms of the disease do not improve on medical regimes. In such cases there is danger of colonic cancer. A one stage colectomy with simultaneous ileostomy is recommended as the safest and most effective treatment for toxic acute ulcerative colitis as well as for the severe intractable chronic forms of the disease. There is no place for ileostomy alone in the treatment of this disease. In chronic, non-toxic forms of ulcerative colitis there has been no mortality in a consecutive series of 22 elective one-stage ileostomies and colectomies followed in most cases by removal of the rectal stump. The authors feel that the patient easily adjusts himself to wearing an appliance and makes satisfactory social and economic adjustments.

WOOD, I. J.: *Value of gastric biopsy in the study of chronic gastritis and pernicious anemia.* Brit. Med. J., Oct. 6, 1951, 823-825.

Wood and his associates in Australia developed an instrument by means of which fragments of gastric mucosa could safely be obtained from the living subject. Histologically they classify their abnormal findings as superficial gastritis, atrophic gastritis and gastric atony. It is the persons in the last group who develop pernicious anemia and/or subacute combined degeneration of the spinal cord, although they encountered a few cases of P. A. in persons with atrophic gastritis. In gastric atrophy no inflammatory evidences are present. Of 41 patients showing gastric atrophy, 39 had pernicious anemia or S.C.D.C. or both. The use of liver extract or vit. B₁₂ has no effect on the gastric atrophy. (Wood emphasizes that superficial gastritis may produce flatulent dyspepsia). His primary aim is, however, how to prevent gastric atrophy, hoping thus to prevent pernicious anemia.

GRENFELL, R. F.: *Treatment of tension headache.* Am. Pract. & Dig. Treat., 2, 11, Nov. 1951, 933-936.

The author first defines and describes tension headaches, characteristically beginning in the occipital region without prodromal symptoms, never one-sided and not to be confused with migraine. He states that in both the migrainal and tension types there is a vascular basis, i.e. cranial arteries constrict and then dilate. However true this statement may be, the author claims good results from the use of dihydroergotamine methanesulfate (DHE 45), a drug which he used only by the intravenous route. He admits the advisability of trying to reduce chronic nervous tension by sedatives and psychotherapy.

UNDERWOOD, G. M.: *Precancerous lesions of the gastrointestinal tract.* Texas State M. J., 47, 11, Nov. 1951.

Underwood thinks that esophagitis is the most important precancerous lesion of the esophagus. Gastric polyps may become malignant. He thinks that gastric ulcers should be considered malignant until they are healed. Among precancerous lesions of the colon, polyps in general and in chronic ulcerative colitis offer the greatest potential danger.

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MADDING, G. F. AND SPENCER, F. M.: *Esophageal hiatus hernia in older persons*. Texas State M. J., 47, 11, Nov. 1951, 748-752.

A series of 37 patients is reported ranging in age from 38 to 82 years (average 62.2 years) with esophageal hiatus hernia who have been observed during the past 3 year period. Associated lesions were not uncommon and must be searched for. Also, such hernias when found are not always symptom-producing. When the symptoms are due to esophageal hiatus hernia the favorable response of many patients to phrenic nerve section has been gratifying.

HARRISON, B. F. AND CHEEK, J. H.: *Intersigmoid hernia*. Texas State M. J., 47, 11, Nov. 1951, 776-779.

Twenty-five cases of hernia of the bowel into the intersigmoid fossa have been reported and the authors report a new case verified by operation. The preoperative diagnosis was appendicitis or Meckel's diverticulitis. The condition is rare and forms only 5 percent of all intraabdominal hernias. One of the characteristic features is the relief experienced by sitting up. The change in position probably lessens the tension on the mesentery of the affected portion of bowel.

WEISS, J.: *Mucous colitis: a case presentation*. Psychosomatic Med., XIV, 1, Jan.-Feb. 1952, 53-58.

A case of mucous colitis is presented, exclusively from the so-called psychiatric standpoint. After several interviews with the psychotherapist, the mucous colitis disappeared. The problem of its real significance remains unsolved. This woman patient's emotional life was rather eventful, encompassing clashes with her mother especially. She could not bear to be successful for fear of hurting someone else. Having obtained an excellent radio position with the harp, she purposely made errors which resulted in losing her job. In the language of the psychoanalyst, this patient was a sado-masochistic character, the exact significance of whose colitis remains an open question. The improvement in her colitis was probably due to some adjustment of her conflicts and also some repression of her "anal-aggressive" tendencies.

WIETHOFF, G. A.: *An analysis of present-day surgical treatment of peptic ulcer*. Indiana State M. J., 44, 11, Nov. 1951, 1101-1104.

This is a thoughtful review of the indications for surgery in peptic ulcer. Wiethoff recognizes that in perforation, suction alone may prove satisfactory but he prefers early operation. In hemorrhage, the younger the patient, the more the physician may temporize, while in older patients with massive bleeding, transfusion and gastrectomy should not be delayed. Sometimes intractable ulcer pain should lead to gastrectomy, but only when prolonged medical treatment is unsuccessful. Ulcer is regarded as a psychosomatic disorder and so, logically, surgery has no place in its treatment, but this is an ideal conception, and at present there is no way to escape surgery. When the psychic element is extremely prominent, no improvement will follow surgery, and so, in such cases, operation should be reserved for life-saving emergencies.

FEBRUARY, 1953

MADDOCK, W. G.: *Some observations on gastrointestinal distention*. Illinois Med. J., 100, 6, Dec. 1951, 349-352.

External air seems to be the chief source of the gas in gastrointestinal distention. Ordinary air-swallowing and the accomplishments of the nervous "aerophagics" are but two extremes of the same process. Increase in respiratory rate and depth (as in nervous hyperventilation) considerably changes intra-esophageal negative pressure, and the nervous reflex mechanism may also alter the superior esophageal sphincter tone, so that a small amount of air is aspirated into the esophagus with each breath. In this way a considerable quantity of air could reach the stomach in a short time. It is likely to occur under stress conditions. Continuous Wangansteen suction and mild sedation serve to control the condition. They are especially valuable in hyperthyroidism.

SWYNNERTON, B. F. AND TRUELOVE, S. C.: *Simple gastric ulcer and carcinoma*. Brit. Med. J. Nov. 24, 1951, 1243-1246.

Among 375 patients with gastric cancer treated at the Radcliffe Infirmary, there were 26 with some evidence that the neoplasm might have arisen in a simple ulcer. There was good clinical evidence of chronic simple ulcer in only half the patients. The site of the neoplasm for the group of 26 patients conformed with the distribution of carcinoma of the stomach and not with that of simple gastric ulcer. In 3 cases the cancer had apparently arisen at a site different from that of a pre-existing ulcer. Most of these cases were examples of ulcerating carcinomata. In any event, the majority were pre-pyloric and it is evident that pre-pyloric ulcers should be considered malignant and subjected to surgical resection.

ROSSETT, N. E., KNOX, F. H. AND STEPHENSON, S. L., JR.: *Peptic ulcer: medical cure by efficient gastric acid neutralization*. Ann. Int. Med., 36, 1, Jan., 1952, 98-100.

The authors found that aluminum hydroxide gel with one-fifth (by volume) of milk of magnesia is a long-acting, non-constipating antacid, when the stomach contains little or no protein. Calcium carbonate with one-tenth (by weight) of magnesium oxide in milk is a long acting antacid, without rebound, not productive of constipation or diarrhea in the stomach containing protein. These antacids, in combination with high protein feedings, used so that Sippy's principle of accurately protecting the ulcer from gastric juice erosion was achieved, have produced pain cessation and ulcer healing in 1288 consecutive uncomplicated ulcer patients without exception or the occurrence of a single episode of obstruction, perforation or bleeding while under treatment. Tincture of belladonna (in rather large doses) decreases the amount of antacid needed to neutralize free HCl.

CROOT, H. J.: *Extensive resection of the small intestine*. Brit. Med. J., Jan. 26, 1952, 195-198.

Extensive small bowel resections are discussed and an attempt made to give some guidance on how much can be removed in certain circumstances. Emphasis is placed on the proportion of the whole removed, and

the amount left behind, in determining the result, rather than on the actual length resected. Two new cases are reported in which the result was satisfactory ten years and one year after a resection of the order of 70 percent. In each of them some 4 to 5 feet of small intestine remained. One was caused by internal incarcerated hernia, the other by mesenteric thrombosis. Certainly one-half the small intestine can be removed without fear of metabolic disturbance.

DALE, G. C.: *Simple therapy about the rectum*. Southern Med. & Surg., 113, 11, Nov. 1951, 348-349.

The author deals with warts, external thrombotic piles, polyps, pruritus ani, simple prolapse, fissure in ano, and simple internal piles. In pruritus ani in aged persons who show other evidences of vitamin deficiency, intravenous B complex has been found useful. He admits a strong neurotic factor in these cases of pruritus and never promises that patient much and, he states, "they eventually wander away." In the case of simple piles, he prefers not to charge a large flat fee, because the patient then will keep coming long after the surgeon is tired of seeing him, so that a reasonable cash fee for treatment is more satisfactory.

BACKHOUSE, T. C. AND BEARUP, A. S.: *Ascariasis in Sidney children and its relation to the urban backyard*. Med. J. Australia, Nov. 3, 1951, 595-596.

By a careful survey the authors show that in certain sections of Sidney, Australia, infestation by ascaris occurs. One phase of the maturation of the parasite occurs in the ground and an examination of unsanitary back-yards, where human feces are frequently deposited by children especially, showed that where the organism was present, the children of that house, other members of the home, and sometimes neighboring homes also were infested. Obviously this was primarily a problem in sanitation.

THOREK, P.: *Acute appendicitis*. Illinois Med. J., 100, 5, Nov. 1951, 290-296.

The mortality of acute appendicitis is still high, since over 5,000 deaths annually occur from this cause in the U. S. A. The "two question" test is useful in diagnosis. Question number one: "Where was your pain when it started?" Question number two: "Where does it hurt now?" The author quibbles somewhat about the value of right rectus rigidity as a diagnostic sign of appendicitis, puristically stating it is rather a sign of peritonitis. He emphasizes the iliopsoas and obturator signs for their value in locating rather than diagnosing appendicitis.

KIEFER, E. D. AND DONOVAN, E. S.: *Management of chronic ulcerative colitis*. Amer. Pract. & Dig. Treat., 2, 12, Dec. 1951, 1019-22.

Medically, the authors stress all the known forms of treatment known to be of benefit in chronic ulcerative colitis including high protein diet, transfusions, vitamins, rest, etc., and they feel that chronic invalidism, should it threaten to develop, may best be avoided by total colectomy. At the Lahey Clinic, the mortality from total colectomy is only 4.1 percent.

CONNOLLY, P. J.: *Tumors of the salivary gland—surgical management and prognosis*. Harper Hosp. Bull., 9, 5, Sept.-Oct. 1951, 141-153.

Mixed tumors of the salivary glands should be considered potentially malignant. Very few surgeons have operated on a large series. Much of the article deals with the technique of removing the parotid without injury to the nerve. All salivary gland tumors should be removed since so many are malignant.

MUSHIN, R.: *The bacteriology of infectious diarrhea*. Med. J. Australia, March 29, 1952, 428-432.

With the exception of hospital outbreaks, the recognized pathogens, such as Salmonella and Shigella, are responsible for a relatively small percentage of diarrhea, especially in temperate climates. Other suspected agents range from viruses and bacteria to fungi and protozoa, but there is still a large anonymous group left for investigation. One should also consider the dietetic and psychosomatic factors which may be involved as predisposing conditions towards infectious diarrhea. The search for the elucidation of the unknown factors still continues.

REYNOLDS, J. T., MARTIN, W. B. AND BRINTON, M. H.: *Surgical treatment of carcinoma of the colon*. Mississippi Valley M. J., 74, 3, May, 1952, 76-79.

Although this article abounds in good surgical advice with respect to many operative details, its general import is to the following effect—cancer of the colon is common and curable but failure results from late diagnosis, although early diagnosis is said by the authors to be easy. The x-ray should not be relied upon for diagnosis of cancer lying within the bony pelvis. Carcinoma and obstruction may almost never be treated at the same operation.

KLECKNER, M. S., BARGEN, J. A. AND BANNER, E. A.: *The association of chronic ulcerative colitis and pregnancy*. Proc. Staff Meet. Mayo Clin., Apr. 23, 1952, 189-190.

The effect of pregnancy on the course of chronic ulcerative colitis is quite unpredictable. There is some justification in looking on pregnancy and the postpartum period as possible aggravating factors in cases of chronic ulcerative colitis. The authors think that patients who have chronic ulcerative colitis should refrain from pregnancy unless a remission of the disease has been present for a long time.

COMFORT, M. W.: *The problem of gastric cancer from the viewpoint of the internist*. Proc. Staff Meet. Mayo Clin., Apr. 9, 1952, 151-156.

The kernel of the problem of increasing the 5-year survival rate consists in getting more patients into the hands of the surgeon while the growth is resectable and before metastases have occurred. Screening methods should be valuable if applied to persons with acidity, particularly x-ray examinations, and especially when carried out by the patients' physicians. Gastric polyps should be removed. About 10 percent of gastric ulcers are malignant.

TIME OUT FOR REFRESHMENT

Coffee, "pop" and orange juice are invading the busiest factories. An independent research organization not long ago studied several hundred companies all over the country and found that in the last 10 years four out of five plants have introduced coffee and beverage breaks. According to company officials, a regular 10- or 15-minute interval, during which the men can consume their coffee, soft drink, or juice, tends to boost morale and production and to cut accident frequency. The men like the habit too; in fact, time for coffee or juice is a specific union contract requirement in 22 percent of the factories included in the survey. Fruit juices are most popular where automatic vending machines have been installed.

INOSITOL, THE MYSTERY VITAMIN

Scientists wonder why vitamin C, essential in preventing scurvy, and inositol, whose nutritional role is not yet fully understood, exist together in large amounts in the same material. A study at Yale Nutritional Laboratory shows that citrus fruits, a prime source of vitamin C, also have an abundance of inositol. "This compound is a potentially important dietary factor," report Drs. W. A. Krehl and George R. Cowgill, the investigators. Recent evidence has shown that inositol is an important part of several natural biological substances.

WHAT BELONGS IN THE SCHOOL LUNCH BOX

Pack a lunch with protective foods, nutrition experts advise mothers of school children. Catherine Wisely, consultant for the School Lunch Program of the Department of Agriculture, says that many mothers "think a lunch is a snack, and a snack is a sweet." Consequently, they fill the lunch box with bread and jelly, cookies or cake, and a sweetened drink, forgetting three essentials: proteins, calcium and vitamin C. These nutrients are simple to supply. Sliced meat or fish salad sandwiches, hard-cooked eggs and cheese all bring

proteins in appetizing forms, and an orange tucked in the corner of the lunch box provides a plentiful measure of vitamin C. For calcium, cheese and milk are of course the best sources. But the milk should not be sweetened, or it will lessen the child's appetite for other foods.

NOTICE

Publicly expressing its gratitude for the cooperation which made the recent human field trials of gamma globulin a scientific success, the National Foundation for Infantile Paralysis presented Certificates of Commendation to the Woodbury County Medical Society of Iowa on December 10, 1952, and to the Utah County Medical Society of Utah on December 12, 1952.

The National Foundation took this means of thanking physician-members of the medical societies in the trial communities for their support of the significant studies which demonstrated the value of gamma globulin as a temporary protection against paralytic poliomyelitis.

The gamma globulin field trials were conducted during epidemics of poliomyelitis in the summer of 1951 in Utah. Completed the following summer in Texas and Iowa, the trials involved 54,772 children, aged one to eleven years, half of whom received control injections of ineffective gelatin while the other half were inoculated with gamma globulin.

The results of the human trials, which were made possible by March of Dimes funds from the National Foundation, revealed that the blood fraction provided "significant protection against paralytic poliomyelitis" with the greatest degree occurring from the second through the fifth week following inoculation. The reports of the trials were published in the October 25, 1952 issue of the *Journal of the American Medical Association*, following a verbal report to the annual meeting of the American Public Health Association in Cleveland.

The Certificates of Commendation expressed the National Foundation's appreciation for the medical societies' enthusiastic support which "encouraged the active participation of thousands of parents who gladly and willingly joined with science to seek a preventive for paralytic poliomyelitis."

WINTHROP-STEARN'S MAKES ANNUAL PRESIDENT'S AWARD AT SALES MANAGER MEETING

New York, N. Y.—D. A. Blomgren, manager of the Detroit professional service office of Winthrop-Stearns Inc., pharmaceutical manufacturer, received the President's Award at the annual sales conference of the company's divisional managers held here, December 17-19, at the Hotel New Yorker.

The presentation was made by Dr. Theodore G. Klumpp, president, at a luncheon on December 19. The award, a handsomely-engraved plaque, is given each year to the divisional manager turning in the outstanding sales performance. Mr. Blomgren has been manager of Winthrop's Detroit professional service office since its formation in 1947. He was formerly a detail man and special hospital representative for Frederick Stearns & Co.

The three-day conference was devoted to an analysis of the firm's 1953 sales program and a discussion of clinical and laboratory research activities relating to new pharmaceutical products. Supervising the conference were J. G. Noh, vice-president and director of sales, and Arthur W. Jensen, general sales manager. Product research developments were outlined by Dr. Justus B. Rice, director of medical research, and Dr. M. L. Tainter, director of the Sterling-Winthrop Research Institute.

Attending the award luncheon were James Hill, Jr., chairman and president of Sterling Drug, Inc.; Dr. J. Mark Hiebert, Sterling's executive vice-president; Dr. F. J. Stockman, Dr. Martin Lasersohn and Sidney C. Mills, vice-presidents of Winthrop.

MEDICAL DIRECTORS' GROUP ELECTS DR. RICE OF WINTHROP-STEARN'S

Dr. Justus B. Rice, director of medical research, Winthrop-Stearns Inc., has been elected president of the Association of Medical Directors, a group comprising heads of the medical departments of approximately 40 U. S. pharmaceutical manufacturers.

Election of officers, who will serve one-year terms, took place during the organization's monthly

meeting held at the Advertising Club in New York City. Dr. Elmer Severinghaus, medical director of Hoffmann-La Roche, was named vice-president, while Dr. Norman Heminway of the Schering Corporation was re-elected to the post of secretary-treasurer.

Dr. Rice, who has directed Winthrop's medical research department since 1937, is an internationally-recognized authority in the field of malaria and other tropical diseases. In this capacity, he most recently served as scientific consultant to the U. S. Army Surgeon-General's Office, and headed a mission to Germany under the auspices of the ECA. He is the author or co-author of 40 publications on malaria and surgical subjects.

Prior to joining Winthrop, Dr. Rice was engaged in malaria research investigations for the Rockefeller Foundation in Egypt, India and Greece. From 1924 to 1932, he was stationed in Panama, Portuguese West Africa and Liberia as medical director of various American concerns. Dr. Rice received his M.D. degree from Washington University School of Medicine in St. Louis, Mo.

TWO HORMONE PREPARATIONS INTRODUCED BY BREON COMPANY

Adding to its extensive line of injectible products, George A. Breon & Company has made available to the medical profession two hormone products, Mertestate and Estrone-Progesterone, it was announced by Graham Erdworm, president. Both hormonal preparations are supplied in aqueous suspensions for intramuscular injection.

Mertestate, a testicular hormone solution, has a marked and sustained androgenic effect, and is primarily used for male sex hormone deficiencies. It is administered intramuscularly in doses ranging from five to 50 mg. two to six times weekly, depending upon the condition and response. In women, it is indicated in treatment of functional uterine bleeding, dysmenorrhea and to inhibit lactation. The suspension is supplied in 10 cc multidose vials containing 100 mg. testosterone per cc.

Estrone-Progesterone is indicated in amenorrhea, habitual abortion and menorrhagia, the advantages of

the combined therapy being prompt relief with fewer injections, Breon states. It is offered in 10 cc multidose vials containing 2.5 mg. estrone and 25 mg. progesterone per cc in aqueous suspension.

A NEW TYPE OF COUGH PREPARATION ISSUED BY ORGANON

Organon Inc., of Orange, N. J., has just introduced a new type of cough preparation—*Tosanon* 'Organon'—offering a unique four-point attack on coughs. A new approach to cough control is provided by a local anesthetic action supplied by mephenesin which helps in relieving irritated throat membranes.

In addition to 75 mg of mephenesin per teaspoonful (an amount sufficient for mild local anesthetic action but far less than the therapeutic dose for muscle relaxation), *Tosanon* offers, in each teaspoonful, 1.67 mg of dihydrocodeinone bitartrate (a superior codeine derivative) for cough reflex depressant action, 400 mg of potassium citrate for efficient, non-irritating expectorant action, and 7.5 mg of pyrilamine maleate for effective anti-histaminic action. These four ingredients are combined in a palatable vehicle with a special spreading action assuring intimate contact of these therapeutic agents with irritated surfaces.

Tosanon should prove a useful preparation whenever cough, regardless of origin, is producing irritation of throat membranes. It is especially helpful for coughs due to colds. The average adult dose of *Tosanon* is one teaspoonful every three to four hours.

Tosanon is available in 1-pint bottles. As with all Organon preparations, *Tosanon* is advertised through professional channels only. Descriptive literature on *Tosanon* is available on request.

PLEBILIN PLUS

The Paul Plessner Company
Detroit 26, Mich.

Digestant
Biliary Stimulant
Laxative

Description: Each enteric-coated tablet provides

Desoxycholic

Acid 32 mg. (½ gr.)

Dehydrocholic

Acid N. F. 50 mg. (¾ gr.)

Malt Diastase .. 50 mg. (¾ gr.)

Bile Salts 100 mg. (1½ gr.)
Pancreatin,

U. S. P. 200 mg. (3 gr.)

The enteric coating allows the digestive enzymes to pass through the stomach with potency unimpaired and ready for action in the intestines.

Action and Uses: to control bloating, belching, epigastric distress, post-prandial fullness, flatulence, nausea, anorexia, constipation, and other symptoms of functional indigestion due to a deficiency of digestive factors, and/or biliary stasis; chronic cholecystitis, pancreatitis, cholangitis, post-cholecystectomy discomforts.

Administration: One or two tablets 3 or 4 times a day, after meals and on retiring, with a full glass of water.

Supply: PLEBILIN PLUS—enteric-coated tablets—Bottles of 100 and 1000.

BREON NAMES BRIGGS TO HEAD SOUTHWEST SALES

New York, N. Y.—Appointment of William J. Briggs as regional manager in charge of sales in the Southwest for George A. Breon & Co., pharmaceutical manufacturer, has been announced by Frederick O. S. Spencer, vice-president in charge of sales.

Prior to assuming his present position, Mr. Briggs had been a member of the firm's sales organization in San Francisco, Calif. since 1948. As regional manager in the Southwest, he will supervise sales of Breon medicinal products to doctors, hospitals and the drug trade in New Mexico, Texas, Oklahoma, Arkansas and Louisiana. He will maintain headquarters at 2615 Mockingbird Lane, Dallas, Texas.

Mr. Briggs served in the U. S. Army from 1940 to 1946, rising to the rank of 1st Lieutenant in the Army Medical Administration Corps. He was stationed in the China-Burma-India theater for 26 months.

NEW PENICILLIN DOSES BY WINTHROP-STEARN'S

Procaine penicillin G in aqueous suspension has been made available in two new dosages by Winthrop-Stearns Inc. The products, one of 600,000 units and the second containing 1,000,000 units, supplement the extensive line of penicillin prep-

AMER. JOUR. DIG. DIS.

arations previously introduced by the pharmaceutical manufacturer.

The new dosages are supplied in sterile disposable Ogle syringes in boxes of 5's. The syringes do not require refrigeration.

WAYS OF BETTER SERVING PHYSICIANS, PHARMACISTS AND PUBLIC STUDIED BY U. S. AND CANADIAN PARKE-DAVIS EXECUTIVES

Detroit.—Ways of better serving physicians, pharmacists and, through them, the general public were studied by nearly 125 key U. S. and Canadian executives of Parke, Davis & Company at their annual meeting here Monday, Dec. 8, through Saturday, Dec. 13.

The agenda called for intensive sessions on new products, research, production, public relations and many other related subjects. The world-wide firm, established in 1866, makes more than 1,000 different medicinals.

Most of the sessions were held in the Sheraton-Cadillac Hotel. Some were scheduled for the firm's home offices along the Detroit River at Joseph Campau.

Presiding was Graydon L. Walker, director of U. S. and Canadian sales, with Carl Johnson, U. S. sales manager, as co-chairman. Climax of the week was a dinner Saturday night, Dec. 13, when Harry J. Loynd, president, spoke.

The executives included branch managers, assistant branch managers, field managers and branch house managers. They came from Detroit and Holland, Mich., Bridgeport, Conn., Albany, N. Y., Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Kansas City, Los Angeles, New Orleans, New York, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis and Versailles, Conn., as well as Walkerville, Toronto, Montreal and Winnipeg, Canada.

Following the annual meeting, an internal operations conference of branch house managers was held from Monday, Dec. 15, through Thursday, Dec. 18. In charge was L. E. Johnson, branch house superintendent.

BOOKS

Little, Brown and Company, old and established publishers of Boston, have announced the formation of a medical book department under the management of Theodore A. Phillips.

Mr. Phillips was formerly vice president of The Blakiston Company and has been connected with medical publishing for 20 years. He was previously vice president and director of J. B. Lippincott Company and sales manager of W. B. Saunders Company.

Little, Brown and Company will shortly announce the publication of several important books in the field of medicine. Manuscripts in medicine, dentistry, pharmacy and the allied sciences should be submitted to Mr. Phillips at the publisher's home office, 34 Beacon Street, Boston 6.

New York.—The cornerstone for the new Henry W. and Albert A. Berg Institute for Experimental Physiology, Surgery and Pathology at the New York University-Bellevue Medical Center was laid, with appropriate ceremonies, on December 3. As a part of the ceremony, a check for \$500,000 for construction of the Institute was presented to Winthrop Rockefeller, Chairman of the Medical Center Board of Trustees, by a representative of the estate of the late Dr. Albert A. Berg.

Dr. Berg, specialist in the field of surgery who died on July 1, 1950, provided the \$500,000, in his will for construction of the institute, named for him and his elder brother, Dr. Henry W. Berg, and also provided a fund of well over \$1,000,000 for its maintenance. Dr. Henry Berg, who was an authority on infectious diseases and internal medicine, died on December 21, 1938.

At a meeting of the joint faculties of the New York University College of Medicine and the New York University Post-Graduate Medical School following the cornerstone laying, Dr. John H. Mulholland, chairman of the department of surgery of the College of Medicine, spoke on the plans and programs of the Berg Institute.

In creating the Institute, Dr. Berg "contemplated a work-shop where physiology and pathology would contribute nutriment for the growth of surgery," Dr. Mulholland said. "He is providing an Institute wherein three disciplines of intellectual endeavor will unite.

Here will be found the difference between a group of departments which medical schools tend to be and a true university atmosphere. Surgery, pathology, physiology and any other thinking discipline (because I am sure Berg was anxious for basic contributions by all approaches) will be combined to achieve his objective of surgical advance by knowledge of fundamental processes."

Dr. Mulholland concluded: "It is noteworthy that Dr. Berg did not restrict the subject of research. He knew, as we know, that facilities for the good person is the important need. A good institute, as a good university, is a collection of good people."

"Now at this dedication, may we of New York University apply ourselves in the Berg Institute in the pursuit of surgical knowledge through all possible intellectual channels so that we may apply surgical skills to the utmost of effectiveness. And may we keep in view the distant star of achievement, which I am sure Berg saw—knowledge sufficient so that we have no need for the surgeon or surgery."

The six-story Institute building adjoins the Center's new Medical Science Building, for which the cornerstone was laid on November 7. The two new buildings are scheduled for completion next fall. The first completed unit in the Medical Center's \$25,000,000 building program, a four-story structure facing Thirty-fourth Street, houses the Center's Institute of Physical Medicine and Rehabilitation.

BREON APPOINTS NEW DIVISION MANAGER

BREON APPOINTS NEW DIVISION MANAGER

New York, N. Y.—Promotion of John Valaik to the position of divisional sales manager of George A. Breon & Company, pharmaceutical manufacturer, was announced by Frederick O. S. Spencer, vice-president in charge of sales. Mr. Valaik will assist C. B. Drolsbaugh in directing distribution of Breon medical products in the northeastern states.

Prior to his current appointment, Mr. Valaik had been associated with the firm's sales organization since January 1946. He had represented Breon during that time in north-central Pennsylvania from headquarters in Wilkes-Barre, where he will continue to be station-

ed. He will supervise sales of the company's extensive line of injectible medicines to doctors, hospitals and the drug trade in Pennsylvania, and parts of New York and New Jersey.

Mr. Valaik joined the Breon staff following service from 1942 to 1946 with the U. S. Marine Corps in World War II.

BREON MAKES AVAILABLE ESTROGENIC SUBSTANCES

Estrogenic Substances, a suspension of purified natural estrogens in an isotonic solution of sodium chloride, has been introduced to the medical profession by George A. Breon & Company, New York. The product, which is injected intramuscularly, is primarily indicated in the treatment of menopause, either natural or induced.

Breon's aqueous suspension of Estrogenic Substances is supplied in two concentrations, 20,000 I. U. and 50,000 I. U. per cc. in 10 cc. multidose vials. Dibestil Caplets, in potencies of 0.2, 0.5, 1.0 and 5.0 mg. diethylstilbestrol dipropionate, are also available through Breon when the use of oral estrogens is indicated as part of the menopausal treatment.

"CHLOROPHYLL IN MEDICINE" STORY TOLD IN NEW BROCHURE

The story of chlorophyll in medicine and its clinically substantiated properties as an aid to normal healing are described comprehensively in a new booklet prepared by the Rystan Company which is now available without charge to physicians, pharmacists, schools and libraries.

Nearly 100 references to reports in medical journals are brought together in what the Company believes to be the most complete and definitive report yet available on this increasingly significant subject.

Included in the monograph are a history of man's interest in chlorophyll; the pharmacodynamics of this unique substance; its many properties, particularly in encouraging the normal healing of resistant wounds and ulcers; and a review of the clinical applications of water-soluble chlorophyll preparations.

Many of the illustrations showing lesions before and after treatment

are in full color. A bibliography for convenient reference to the already extensive body of literature is also included.

Rystan has pioneered for more than a decade in the study and development of water-soluble chlorophyll preparations. Its Chloresium Ointment and Solution, first therapeutic chlorophyll preparations to be introduced to the medical profession, are the only ones accepted by the American Medical Association.

Copies of "Chlorophyll in Medicine" may be obtained directly from the Company offices in Mt. Vernon, New York.

SULFAMYLYN CALLED MORE EFFECTIVE THAN ANTIBIOTICS IN EAR INFECTION

Sulfamylon has proved more effective in treating 100 soldiers with external otitis than any other procedure, including available antibiotics, according to Dr. James E. Lett of the U. S. Air Force's Department of Otolaryngology. His findings comprise Project Number 21-32-026 of the Air University, USAF School of Aviation Medicine, Randolph Field, Texas.

The study was conducted by Dr. Lett in order to verify previous findings suggesting bacteria, rather than fungi, as the etiologic agents in external otitis. A five per cent solution of Sulfamylon hydrochloride in methyl cellulose was used topically in 100 patients in the Air Force hospital in Texas. Over 39 per cent of the cases were dismissed in five days or less; 65 per cent in seven days or less, and 76 per cent in less than 10 days. Use of Sulfamylon, Dr. Lett states, was followed by marked relief of symptoms.

The same therapeutic plan was subsequently field-tested in the Far East among U. S. troops with a minimum of laboratory aids, the report adds. The results, based on observation of clinical subsidence of infection and normal appearance of the subjects, "were better than those obtained by any other procedure," according to the author.

A topical chemotherapeutic sulfonamide preparation, Sulfamylon is bactericidal for a wide range of bacteria, including various gram-negative and gram-positive organ-

isms, found in infected wounds. It is supplied by Winthrop-Stearns Inc.

METHISCHOL INJECTABLE

U. S. Vitamin Corporation
New York 17, N. Y.

Parenteral
Lipotropic
Therapy

Description: Makes available for the first time a complete, synergistic formula combining choline, methionine, inositol and vitamin B₁₂ in two separate sterile solutions, one for intramuscular injection, and one for intravenous use under proper dilution.

Each 2 cc. ampul (for intramuscular use) provides:

Choline Chloride	200 mg.
dl, Methionine	50 mg.
Inositol	100 mg.
Vitamin B ₁₂	6 mg.

Each 10 cc. ampul (for use in intravenous infusions) provides:

Choline Chloride	1000 mg.
dl, Methionine	250 mg.
Inositol	500 mg.
Vitamin B ₁₂	30 mg.

Action and Uses: Indicated in liver disorders, diabetes, hypercholesterolemia, coronary disease, atherosclerosis, alcoholism, nephrosis, hypertension. Helps normalize cholesterol and fat metabolism and may prevent deposition of cholesterol in intima of blood vessels; in liver disease, helps increase phospholipid turnover, reduces fatty deposits, and stimulates regeneration of new liver cells.

Administration: The contents of the 2 cc. ampul should be administered intramuscularly, and should be injected *slowly* into the gluteal muscle or deep in the outer aspect of the thigh, changing the site for each injection.

The 10 cc. intravenous ampul is intended for intravenous feeding, and should be added to not less than 500 cc., preferably 1000 cc. of intravenous dextrose or saline administered by drip at a rate of not more than 1000 mg. of choline per hour. It should *not* be injected undiluted. Warning: If any cholinergic reaction supervenes, the injection should be stopped immediately.

Supplied: METHISCHOL INJECTABLE—2 cc. ampul (intramuscular), boxes of 6, 25 and 100.

10 cc. ampul (intravenous), boxes of 1, 5, 25 and 100.

CHLOROPHYLL

A Chlorophyll Industry Committee to codify standards in processing and application, encourage research, and disseminate information about chlorophyll, has been set up by a group of processor representatives. The formal establishment of the Committee follows several months of conferences by leading figures in the industry. The Committee will intensify and enlarge projects already undertaken by individual members of the industry.

Among the active participants in the formation of the group were M. M. Ricketts, American Chlorophyll Division of Strong, Cobb and Company; Walter H. Kenlan, National Chlorophyll and Chemical Company; Donald G. Carpenter, Chlorophyll Division of Archer-Daniels-Midland Company. Other producers are represented in the Committee, and plans call for the participation of leading users.

In a resolution adopted at its first meeting, the Committee said: "The possibilities for important beneficial application of chlorophyll have only begun to be realized. For that reason we deplore those uses which are not warranted and supported by sound research. Such uses are actually misapplications of an important scientific development, and they divert attention from the more substantial and significant properties of the product as a therapeutic agent and deodorant."

The Committee will continue the industry's cooperation with the compilers of the National Formulary, and with other authorities and agencies, toward the formulation and acceptance of precise standards governing the processing and application of chlorophyll. It also has begun to coordinate the promotion and support of laboratory and clinical research projects in universities and medical schools, relating to the nature, function and therapeutic properties of chlorophyll.

To further its program, the Committee is considering plans for the institution of a Chlorophyll Foundation which will be wholly supported by the industry.

MORE TRAINED MENTAL HEALTH WORKERS NEEDED, WHO CONFERENCE AGREES

Alexandria, Egypt, December 15.—Need for increased numbers of

well-trained people to develop mental health services throughout the Eastern Mediterranean region was unanimously agreed upon by specialists from Egypt, the Sudan, Iraq, Lebanon and Syria at a conference held recently at the World Health Organization's Regional Office in Alexandria.

The group asked WHO to plan a regional seminar for psychiatrists, nurses, psychologists, sociologists and social workers. Plans were drawn up to hold the seminar at some central place in the Eastern Mediterranean region for two weeks late in 1953. Participants will be nominated by governments of the Region on the invitation of WHO.

The specialists who have just met in Alexandria revealed that mental health services in the countries of the region are little developed or not yet begun. They suggested that next year's seminar discuss methods of training medical men in post-graduate psychiatric studies, and for training attendants and general nurses for psychiatric work, specialized psychiatric nurses, psychiatric social workers and clinical psychologists.

They also called for consideration of the organization of psychiatric treatment for both regular patients and outpatients. It was agreed that treatment must be developed along lines that would not conflict with the culture patterns and social background of the people in the various countries.

The problem of drug addiction, particularly hashish, was also recommended for discussion.

Professor G. Kraus, psychiatrist at the University Clinic, Groningen, Holland, was chairman of the conference.

Following is the text of a talk given by Dr. John Mulholland on the occasion of the laying of the cornerstone of the Henry W. and Albert A. Berg Institute for Experimental Physiology, Surgery and Pathology at the New York University-Bellevue Medical Center: Dr. Mulholland is George Davis Stewart Professor of Surgery and Department Chairman at the New York University College of Medicine, a unit of the Medical Center.

I am greatly honored to be permitted to speak on the occasion of the Cornerstone laying of the Berg

Institute. I was undoubtedly designated for this honor because one of the activities for which the Institute is being dedicated is surgical research and surgery is my field. Also, perhaps, because I knew and admired Dr. Berg and talked to him on various occasions regarding the Institute.

I propose to speak briefly about Dr. Berg himself: about his munificent gift; and about the meaning of that gift to New York University.

The interesting aspects of Albert A. Berg's character to be considered at this specific tribute to him are not his superb surgical skill, his wide influence on surgical practice or his literary erudition. Rather, it is of more interest to try to dissect the intangibles in him which created his drive, his prescience, and what we here in this medical center would like to believe was the highest order of discernment and sagacity whereby he made New York University the object of his bounty. Berg was an alumnus of one of our sister medical schools; he was associated throughout his surgical career with Mt. Sinai Hospital; we never were so fortunate that we counted him amongst our faculty, and as far as I know, he never practiced his skills in Bellevue Hospital. His decision to bequeath a large sum of money to us was reached without any extensive survey. He talked to Chancellor Chase and Dean McEwen and made his interest known before he became familiar with the Department of Surgery. I doubt if he ever had contact with the departments of pathology and physiology. My first conference with him was on his ideas about what the Institute would accomplish, his reasons for specifying the amount of money to be used for building and his purpose in exacting a separate building. At that time he contemplated a workshop where physiology and pathology would contribute nutriment for the growth of surgery. The decision to create the Institute and to establish it here was more instinctive and intuitive than it was reasoned in the ordinary sense of the word "reasoned."

I believe this instinctive individualism was a prominent feature of the man. In many ways he was an orderly perfectionist. His meticulous operating skill and attention to details was evidence of this side of

him. But in certain broad, far-reaching attitudes he was thinking on a higher level and with foresight which defies analysis. His selection of the men who worked with him falls into this category and one of his great surgical contributions is another example of this characteristic.

Berg was chief of the gastro-intestinal service at Mt. Sinai Hospital. He was occupied in great part with the problem of surgical management of that plague of civilization—duodenal ulcer—as are many surgeons of this day. Because of the capriciousness of the disease (and our lack of knowledge contributes to this) precise results of operations are hard to assess. The accepted surgical treatment in the early 1920's was a rather simple by-passing operation, gastroenterostomy. His assessment of the effectiveness of this operation was forthright. He found many patients not improved and some made worse. On the basis of work done by Von Haberer and experiments performed under Berg's direction he espoused what was to become the universally accepted operation of removal of part of the stomach—partial gastrectomy. Consider that Berg removed a great part of the stomach, an organ in which no disease can be demonstrated and which was indicated only because it worked too well, for the treatment of a disease which existed in a more distal organ. The procedure was widely criticized as being too radical. Prominent surgeons declaimed in writing (writing which I am sure they wish could be retracted now) that such a procedure was unwarranted; that the simpler procedure was eminently satisfactory in their hands; that they would never be converted to the adoption of Berg's principles. He remained steadfast in spite of criticism.

Furthermore, and also revealing, is another story regarding this same disease and its operative treatment. In the early 1930's Berg supported and directed further studies on stomach function by a young protege, Eugene Klein. Looking forward to more direct surgical attack Berg was led by Klein's studies to propose that the vagus nerve of the stomach be cut and thus overactivity be curtailed and duodenal ulcer be relieved. This concept just missed because of a detail which Drag-

stedt perceived when he re-introduced this operation in the middle of the 1940's. It is amusing to read statements of the very same eminent surgeon who decried the introduction of radical removal of a large part of the stomach on the proposal that cutting the vagus nerves be tried. Here are the same phrases, the same complacency, gastrectomy is eminently more satisfactory in their hands, they will not be converted, etc.

This stand on the removal of the stomach for duodenal ulcer is an example of the assurance with which A. A. Berg faced large issues. His conduct was not sheep-like or conformist. He knew he was right because of studious preparation of facts plus an instinctive recognition of truth and events. I dare say he used these qualities in other fields and thus he was enabled to enrich the world's great libraries as well as universities.

I am sure we at New York University will be excused for our pride. We are entitled to feel set up at being chosen to create the Berg Institute when such perspicacity did the choosing and so many sites were available. What did this man, who was ahead of his time, see in us? More than antiquated buildings; crowded laboratories, bee-hive activity in Bellevue Hospital, obstacles, and a host of students! These are what we see in ourselves. He must have approved of us in general. More arresting, he must have detected in us the essential qualities necessary for improving the lot of sick people by research into the mechanisms of disease. Reflection on this tempers our pride somewhat because co-existing with the thought is the realization that we are accepting responsibilities with the gift.

He is providing an Institute wherein three disciplines of intellectual endeavor will unite. Here will be found the difference between a group of departments which medical schools tend to be and a true university atmosphere. Surgery, pathology, physiology and any other thinking discipline (because I am sure Berg was anxious for basic contributions by all approaches) will be combined to achieve his objective of surgical advance by knowledge of fundamental processes. Here people will think about surgical diseases unrestrained by

administrative department barriers of which the speeding truck, the spreading cancer and the invading micro-organism are so unaware.

I would like to consider the problems concerned with the disease which held Berg's interest and how the Institute may contribute to their solution. Let me begin by citing a case which was studied and treated on the Third Surgical Division of Bellevue Hospital.

Patient (T. R.) was a 39 year old man who was referred to us from the medical service because of intractable pain and disability due to a duodenal ulcer. He was operated upon and his vagus nerves were cut. This resulted in relief of pain; increase in appetite and weight gain; what would be considered a favorable outcome from treatment. However, the patient did not return to work and seemed far from happy. He was dispirited, and while grateful for the interest and care given him, complained of vague disorders unrelated to his ulcer and inability to face his job as a truck driver again. He was made the subject of a case study by the Department of Preventive Medicine, that is, two students were assigned to evaluate the conditions of this man's life, (his home, his family, his job) which might have a bearing on his troubles. The revelations of this study were of great interest. He was evaluated by the students as a worthy, hard-working, extremely conscientious and sober man. He was an attentive husband and a devoted ambitious father of seven children. His oldest child, a 16 year old girl, was about to enter college with a brilliant high school record. He was proud of this and anxious to further her education. He felt the same about his other children. His reluctance to return to work was traced to this peculiar circumstance: that his income from Welfare agencies during his illness was greater than he could earn by working as a truck driver. This was, of course, due to the large number of dependents toward whom he felt a deep obligation. The conference which was held to discuss the whole problem was ended with no satisfactory solution. The man was in the dilemma of choosing between working and supporting his family which he desired to do, and being sick and obtaining more money for them, a conflict between his sense of self

respect and his ambitions for his family. In any case he was seen frequently and with much sympathy until after a few months word was received that he had committed suicide by jumping out of an upper story window.

The first impulse of the physician to this situation is to disclaim responsibility and label the problem a sociological one. I disagree with this easy escape. I believe that there are biological answers to these following questions if we could but work them out.

Why did this effective and valuable individual react so disastrously to sociological problems which face many or all men?

Why did his duodenum ulcerate as a result of tensions and worthy ambitions when others with similar drives do not?

Why is the best we can offer him in medical, surgical and preventive measures inadequate?

These biological answers are obtainable through study in such a facility as is provided us in the Berg Institute. A medical school population with its broad interests in the complex chemistry of a human being is the ideal and, indeed, only environment which can support such studies. The infinitesimally small and subtle variations which constitute the difference between illness and health are a goal but we can expect returns before all the answers are known. Insulin in the treatment of diabetes and Vitamin B₁₂ in primary anemias are examples of the effective treatment of poorly understood basic chemical alterations. Both these discoveries may be said to be the product of institute type research.

In his years of effort to treat duodenal ulcer Berg realized that operations on such patients were admissions of failure to prevent ulcers, and further failure to treat them without operation. Both failures result from lack of knowledge of the cause and mechanism of progression. Broadly, all surgery is the same. We operate on cancers because that is the best we can do. The future will inevitably bring more knowledge and eliminate the necessity for surgery and surgeons, not only in cancer but in all other surgical diseases. When our knowledge is nearer perfection there will be no need for surgeons. The only area of surgical practice which appears bleak is that concerned with

injuries. But surely, some way to accomplish speedy transport of human bodies without maiming and killing them will be found, and man should reach a point at some future date when the folly of war is obvious.

It is noteworthy that Dr. Berg did not restrict the subject of research. He knew, as we know, that facilities for the good person is the important need. A good institute, as a good university, is a collection of good people.

Now, at this dedication, may we of New York University apply ourselves in the Berg Institute to the pursuit of surgical knowledge through all possible intellectual channels so that we may apply surgical skills to the utmost of effectiveness. And may we keep in view the distant star of achievement, which I am sure Berg saw, knowledge sufficient so that we have no need for the surgeon or surgery.

**PARKE, DAVIS & COMPANY
PROMOTES MILTON M.
GINGRICH, 44, TO ASSISTANT
SUPERINTENDENT OF
EXPANDED PLANT SERVICES**

Detroit—Effective Jan. 1, 1953, Milton M. Gingrich, 44, will become assistant superintendent of expanded plant services of the construction and maintenance division at Parke, Davis & Company.

A native of Reed City, Mich., Gingrich was graduated from Hillsdale College and then received a B. S. degree in chemical engineering at the University of Michigan in 1930.

He joined the world-wide pharmaceutical firm almost immediately thereafter and has held supervisory positions in the ampoule, drug and chemical departments. Prior to his latest promotion, Gingrich has been in charge of various plant services.

He lives at 5500 Courville Avenue, Detroit.

AMERICAN BOARD OF INTERNAL MEDICINE SUBSPECIALTY EXAMINATION IN GASTROENTEROLOGY

The next examination in the Subspecialty of Gastroenterology will take place on Friday and Saturday, April 10 and 11, 1953, at Philadelphia. These dates precede the An-

nual Meeting of the American College of Physicians.

Further information concerning this examination may be secured from:

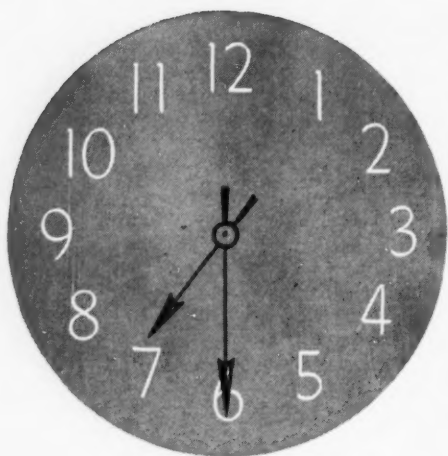
Doctor William A. Werrell,
Secretary of the American Board
of Internal Medicine,
One West Main Street,
Madison, 3, Wis.

Chicago. — Talk-A-Phone Co., 1512 So. Pulaski Rd., world's largest independent manufacturers of intercommunications systems, today introduced its new 20-watt Redi-Power Talk-A-Phone, featuring a baseboard mounted power supply enabling the unit to deliver up to twice the maximum output of its 1952 10-watt counterpart. There will be NO increase in price for the new model, Arie Liberman, president of Talk-A-Phone Co., announced.

The new power supply, a compact, attractively housed unit, will deliver up to 20-watts output, and is self-compensating to deliver required power to all or a select group of stations, supplying ample power to each station when called simultaneously as well as individually.

The new Redi-Power Talk-A-Phone also features several other exclusive new engineering improvements. The power supply eliminates the need for a separate booster or paging system and does away with the need for a larger cabinet. The new model retains the compact size and modern styling of the Talk-A-Phone line, with the power supply housed in a small crackle-finished louvred unit installed out of sight but available for ready use.

The new unit also features Multi-Magic Selector; Dynasonic Universal feature; Hold-a-matic conference control; Uni-trans dictation control and other exclusive features of the new "Chief" series. A safety fuse, adequately fusing the unit on both sides of the line also is incorporated. Twelve, twenty, thirty or forty station capacity can be housed in the same cabinet with only twelve push-buttons, while with the Dynasonic Universal feature the system can be expanded or changed at any time to handle new situations or requirements without discarding the original equipment. Uni-Trans dictation control eliminates the need to operate any controls while dictating, and with Voice Range Power, sta-



habit time

- Habit Time of Bowel Movement—
not merely relief of constipation—is
secured by proper use of Petrogalar.

Petrogalar promotes development
of normally hydrated, comfortable
and easily passed stools.

Once achieved, the normal bowel
habit may often maintain itself even
though the dosage of this adjuvant
is slowly tapered off.

PETROGALAR[®]

AQUEOUS SUSPENSION OF MINERAL OIL, PLAIN

Supplied: Bottles of one pint





for a top score against nutritional deficiencies...

ABDEC® KAPSEALS®

comprehensive multivitamin therapy

ABDEC Kapseals provide patients with the plentiful multivitamin intake that sound nutrition demands. Their ten important nutritive factors *assure* comprehensive coverage. Whether you prescribe ABDEC Kapseals for prophylaxis or for therapy, you can count on their meeting the nutritional needs of your patients.

dosage: For the average patient 1 ABDEC Kapseal daily.

During pregnancy and lactation, 2 Kapseals daily. Three Kapseals daily are suggested for patients in febrile illness, for preoperative and for postoperative patients, and for patients in other situations in which vitamin deficiencies are likely to occur.

each ABDEC Kapseal contains:

Vitamin A	10,000 units
Vitamin D	1,000 units
Vitamin B ₁ (thiamine hydrochloride)	5 mg.
Vitamin B ₂ (riboflavin)	3 mg.
Vitamin B ₆ (pyridoxine hydrochloride)	1.5 mg.
Vitamin B ₁₂	2 mcg.
Pantothenic Acid (as the sodium salt)	5 mg.
Nicotinamide	25 mg.
Vitamin C (ascorbic acid)	75 mg.
Mixed Tocopherols (vitamin E factors)	5 mg.

ABDEC Kapseals are supplied in bottles of 50, 100, 250, and 1000.



Parke, Davis & Company
DETROIT, MICHIGAN

for the
patient
with
too much
**GASTRIC
ACID**



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XVIII

THE AMERICAN JOURNAL OF DIGESTIVE DISEASES

tions may be thousands of feet apart without impairing the clarity or naturalness of tone.

MICHIGAN BRANCH, AMERICAN PHARMACEUTICAL ASSOCIATION, ELECTS GORDON F. GOYETTE, JR., OF PARKE, DAVIS & CO., AS PRESIDENT

Detroit.—Gordon F. Goyette, Jr., 31, medical service representative for Parke, Davis & Company, has been elected president of the Michigan Branch, American Pharmaceutical Association.

The organization, which represents about 5,000 pharmacists throughout the state, also chose Donald Meredith of the Upjohn Company as vice-president. Mrs. Jane L. Rogan, chief pharmacist for Deaconess Hospital, Detroit, was renamed secretary and Miss Lillian Russell of Parke, Davis & Company, treasurer.

Goyette is a native of Detroit and a graduate of the Detroit Institute of Technology. He joined Parke-Davis in October, 1949, as a member of the sales staff. He lives in Allen Park, Mich.

Goyette succeeds Albert R. Pisa, Detroit retail pharmacist and head of the City Board of Health, as Michigan Branch president.

The new officers will take over their duties in June.

INDIANA PHYSICIAN JOINS PARKE, DAVIS & COMPANY

Detroit.—Dr. Marshall I. Hewitt, 39, has joined the professional promotion department of Parke, Davis & Company, Graydon L. Walker, vice-president and director of U. S. and Canadian sales and promotion, announced today.

Dr. Hewitt will be engaged in the preparation and editing of medical literature and other material for the information of physicians, Walker said. Parke-Davis is one of the world's largest manufacturers of medicines prescribed by physicians.

A native of South Bend, Ind., Dr. Hewitt attended South Bend Central Senior High School and Indiana University, receiving his doctorate in medicine from I. U. in 1937.

He had his general internship and residency in clinical research at Indianapolis General Hospital. Ex-

cept for four years' service as a medical officer with the U. S. Army in the Pacific and Japan during World War II, Dr. Hewitt practiced internal medicine in South Bend before joining Parke-Davis.

Dr. Hewitt is a member of the St. Joseph County and Indiana State Medical Associations, the American Medical Association, the American Diabetes Association, and the American Federation for Clinical Research.

ANNOUNCEMENT

An advanced course in autoradiography and three basic courses in radioisotope techniques are course offerings of interest to medical and biological personnel planned this spring and summer by the Special Training Division of the Oak Ridge Institute of Nuclear Studies.

The autoradiography course will be held from June 15-25, and basic courses of four weeks duration will begin on June 8, July 6, and August 10.

The autoradiography course will be the second to be given at Oak Ridge, an earlier one having been given in the summer of 1951. It is intended for research level personnel using or planning to use this technique in their research.

Lectures, consultations, laboratory demonstrations and discussions will comprise the course. Leaders in the field will be on hand as lecturers and demonstration supervisors. Subjects to be covered include both the application of the autoradiographic method and the theoretical bases of the method.

Application forms and additional information may be obtained from the Special Training Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tenn.

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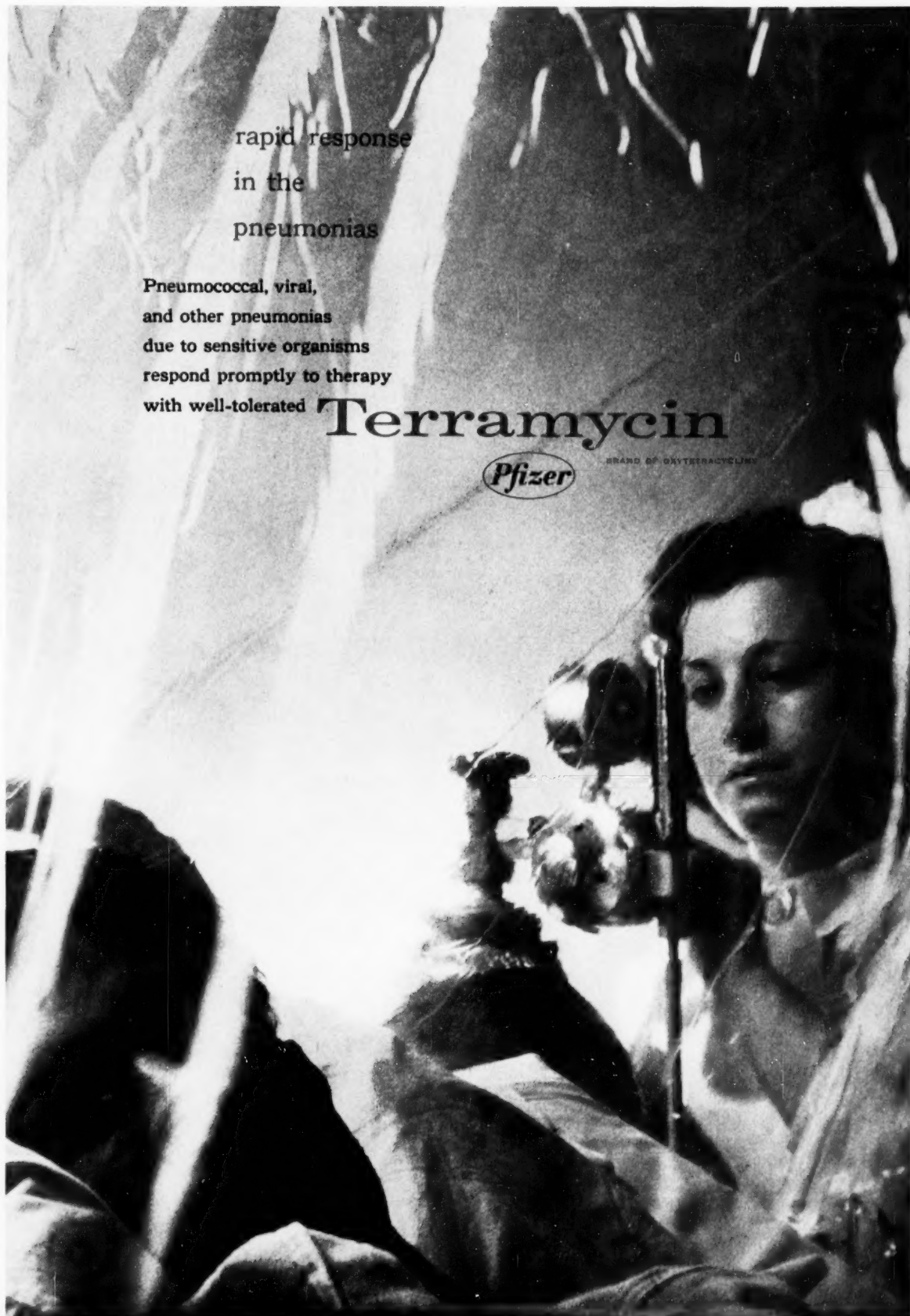
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hypertensive disease
fenestration procedures
labyrinthitis
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